

Standard Thermodynamic Values at 25°C

Please note that enthalpy and free energy values are given in kJ/mol while entropy values are given in J/(mol·K).

Compound	ΔH_f°	ΔS°	ΔG_f°
(BOCl) ₃ (g)	-1633.4	380.7	-1550.2
(CN) ₂ (g cyanogen)	309.0	242.3	297.2
(NH ₂) ₂ CO (s urea)	-333.5	104.6	-196.8
(NH ₄) ₂ O (ℓ)	-430.7	267.5	-267.1
(NH ₄) ₂ SiF ₆ (s hexagonal)	-2681.7	280.2	-2365.6
(NH ₄) ₂ SO ₄ (s)	-1180.9	220.1	-901.9
[Co(NH ₃) ₅ Cl]Cl ₂ (s)	-1017.1	366.1	-582.8
[Co(NH ₃) ₅ NO ₂](NO ₃) ₂ (s)	-1088.7	347.3	-418.4
[Co(NH ₃) ₅ NO ₂] ⁺² (aq)	-613.4	179.9	-172.8
[Co(NH ₃) ₆](ClO ₄) ₃ (s)	-1034.7	615.1	-221.8
[Co(NH ₃) ₆](NO ₃) ₃ (s)	-1282.0	447.7	-516.7
[Co(NH ₃) ₆]Br ₃ (s)	-1002.9	325.1	-501.2
2CaO•B ₂ O ₃ (s)	-2734.4	145.1	-2596.7
2CaO•Fe ₂ O ₃ (s)	-2139.3	188.8	-2001.8
2CaO•MgO•SiO ₂ (s akermanite)	-3877.2	209.2	-3680.0
2CaO•V ₂ O ₅ (s)	-3083.4	220.5	-2893.2
2CuCl•C ₂ H ₂ (s)	-97.5	212.1	-31.9
3BeO•B ₂ O ₃ (s)	-3104.5	100.4	-2938.8
3CaO•2SiO ₂ (s)	-3961.0	210.8	-3761.4
3CaO•2TiO ₂ (s)	-3950.5	234.7	-3751.4
3CaO•Al ₂ O ₃ (s)	-3587.8	205.9	-3412.1
3CaO•B ₂ O ₃ (s)	-3429.1	183.7	-3259.9
3CaO•MgO•2SiO ₂ (s merwinite)	-4567.7	253.1	-4340.5
3CaO•SiO ₂ (s)	-2929.2	168.6	-2784.0
3CaO•V ₂ O ₅ (s)	-3777.9	274.9	-3561.1
3CuCl•C ₂ H ₂ (s)	-236.0	297.1	-152.8
Ac (g)	406.0	188.1	366.0
Ac (s)	0.0	62.8	0.0
Ag (g)	284.9	173.0	246.0
Ag (s)	0.0	42.6	0.0
Ag ⁺¹ (aq)	105.6	72.7	77.1
Ag ₂ (g)	410.0	257.0	358.8
Ag ₂ C ₂ O ₄ (s)	-673.2	209.2	-584.1
Ag ₂ CO ₃ (s)	-505.9	167.4	-436.8
Ag ₂ CrO ₄ (s)	-731.7	217.6	-641.8
Ag ₂ MoO ₄ (s)	-840.6	213.4	-748.1
Ag ₂ O (s)	-31.1	121.3	-11.2

Compound	ΔH_f°	ΔS°	ΔG_f°
Ag ₂ O ₂ (s)	-24.3	117.2	27.6
Ag ₂ O ₃ (s)	33.9	100.4	121.3
Ag ₂ S (s alpha orthorhombic)	-32.6	144.0	-40.7
Ag ₂ S (s beta)	-29.4	150.6	-39.5
Ag ₂ Se (s)	-37.7	150.7	-44.4
Ag ₂ SeO ₃ (s)	-365.3	230.1	-304.2
Ag ₂ SeO ₄ (s)	-420.5	248.5	-334.3
Ag ₂ SO ₃ (s)	-490.8	158.2	-411.3
Ag ₂ SO ₄ (s)	-715.9	200.4	-618.5
Ag ₂ Te (s)	-37.2	154.8	43.1
AgBr (s)	-100.4	107.1	-96.9
AgBrO ₃ (s)	-10.5	151.9	71.3
AgCl (s)	-127.0	96.3	-109.8
AgClO ₂ (s)	8.8	134.6	75.7
AgClO ₃ (s)	-30.3	142.0	64.5
AgCN (s)	146.0	107.2	156.9
AgF•2H ₂ O (s)	-800.8	174.9	-671.1
AgI (s)	-61.8	115.5	-66.2
AgIO ₃ (s)	-171.1	149.4	-93.7
AgN ₃ (s)	308.8	104.2	376.1
AgNO ₂ (s)	-45.1	128.2	19.1
AgNO ₃ (s)	-124.4	140.9	-33.5
AgO (s)	-11.4	57.8	14.2
AgOCN (s)	-95.4	121.3	-58.2
AgReO ₄ (s)	-736.4	153.1	-635.6
AgSCN (s)	87.9	131.0	101.4
Al (ℓ)	8.7	35.2	6.6
Al (g)	326.4	164.4	285.8
Al (s)	0.0	28.3	0.0
Al(BH ₄) ₃ (ℓ)	-16.3	289.1	144.8
Al(BH ₄) ₃ (g)	12.6	379.1	146.4
Al(CH ₃) ₃ (ℓ)	-136.4	209.4	-10.0
Al(NO ₃) ₃ •6H ₂ O (s)	-2850.5	467.8	-2203.9
Al(NO ₃) ₃ •9H ₂ O (s)	-3757.1	569.0	-2929.6
Al(OH) ₃ (s)	-1284.5	71.1	-1305.8
Al ⁺³ (aq)	-531.4	-321.8	-485.3
Al ₂ (CH ₃) ₆ (g)	-230.9	524.7	-9.8

Compound	ΔH_f°	ΔS°	ΔG_f°
Al ₂ (SO ₄) ₃ (s)	-3435.1	239.3	-3506.6
Al ₂ Br ₆ (g)	-1020.9	547.3	-947.3
Al ₂ Cl ₆ (g)	-1295.4	475.5	-1220.9
Al ₂ F ₆ (g)	-2631.7	387.0	-2539.7
Al ₂ I ₆ (g)	-506.3	584.1	-560.7
Al ₂ O (g)	-131.4	259.4	-161.1
Al ₂ O ₃ (ℓ)	-1581.1	89.6	-1499.3
Al ₂ O ₃ (s alpha-corundum)	-1675.3	50.9	-1582.0
Al ₂ O ₃ (s gamma-corundum)	-1656.9	59.8	-1562.7
Al ₂ O ₃ •3H ₂ O (s gibbsite)	-2562.7	140.2	-2287.4
Al ₂ O ₃ •H ₂ O (s diaspore)	-2000.0	70.5	-1841.0
Al ₂ O ₃ •H ₂ O (s boehmite)	-1974.9	96.9	-1825.5
Al ₂ Si ₂ O ₇ •2H ₂ O (s kaolinite)	-4098.7	202.9	-3778.2
Al ₂ Si ₂ O ₇ •2H ₂ O (s halloysite)	-4079.8	203.3	-3759.3
Al ₂ SiO ₅ (s kyanite)	-2596.2	83.8	-2443.9
Al ₂ SiO ₅ (s andalusite)	-2592.0	93.3	-2444.7
Al ₂ SiO ₅ (s sillimanite)	-2593.2	96.2	-2442.6
Al ₄ C ₃ (g)	-215.9	89.1	-203.3
Al ₄ C ₃ (s)	-207.3	104.6	-238.5
Al ₆ BeO ₁₀ (ℓ)	-5299.5	314.9	-5034.2
Al ₆ BeO ₁₀ (s)	-5624.1	175.6	-5317.5
Al ₆ Si ₂ O ₁₃ (s mullite)	-6819.9	274.9	-6443.4
AlBO ₂ (g)	-541.4	269.5	-550.6
AlBr ₃ (ℓ)	-501.2	206.5	-486.3
AlBr ₃ (g)	-410.9	349.1	-438.5
AlBr ₃ (s)	-511.1	180.3	-488.3
AlC (g)	689.5	223.3	633.0
AlCl (g)	-51.5	227.9	-77.8
AlCl ₂ (g)	-288.7	288.3	-299.6
AlCl ₃ (ℓ)	-674.8	172.9	-618.2
AlCl ₃ (g)	-584.5	314.3	-570.1
AlCl ₃ (s)	-705.6	109.3	-630.1
AlCl ₃ •6H ₂ O (s)	-2691.6	376.6	-2269.4
AlF (g)	-265.3	215.1	-290.8
AlF ₂ (g)	-732.2	263.2	-740.6
AlF ₃ (g)	-1209.2	276.8	-1192.9
AlF ₃ (s)	-1510.4	66.5	-1430.9
AlF ₃ •3H ₂ O (s)	-2297.4	209.2	-2051.8
AlH (g)	259.2	187.8	231.2
AlI ₃ (ℓ)	-297.1	219.7	-301.3
AlI ₃ (g)	-205.0	363.2	-251.0

Compound	ΔH_f°	ΔS°	ΔG_f°
AlI ₃ (s)	-309.6	189.5	-305.4
AlN (g)	435.1	211.7	410.0
AlN (s)	-318.0	20.2	-287.0
AlO (g)	83.7	218.3	57.7
AlOCl (g)	-348.1	248.8	-350.2
AlOCl (s)	-793.3	54.4	-737.3
AlOF (g)	-586.6	234.3	-587.0
AlOH (g)	-179.9	216.3	-184.1
AlPO ₄ (s berlinite)	-1692.0	90.8	-1601.2
AlS (g)	200.8	230.5	150.2
Am (c)	0.0	62.8	0.0
Am ⁺³ (aq)	-682.8	-159.0	-671.5
Am ⁺⁴ (aq)	-511.7	-372.4	-461.1
Am ₂ O ₃ (s)	-1757.3	154.7	-1677.8
AmO ₂ (s)	-1005.0	83.7	-950.2
Ar (g)	0.0	154.7	0.0
As (s alpha-gray)	0.0	35.2	0.0
As ₂ (g)	222.2	239.3	172.0
As ₂ O ₅ (s)	-924.9	105.4	-782.4
As ₂ S ₃ (s)	-169.0	163.6	-168.6
As ₄ (g)	143.9	313.8	92.5
As ₄ O ₆ (g)	-1209.2	380.7	-1097.9
As ₄ O ₆ (s monoclinic)	-1309.6	234.3	-1154.0
As ₄ O ₆ (s octahedral)	-1313.9	214.2	-1152.5
AsBr ₃ (g)	-129.7	363.8	-159.0
AsCl ₃ (ℓ)	-305.0	216.3	-259.4
AsCl ₃ (g)	-261.5	327.1	-249.0
AsH ₃ (g)	66.4	222.7	68.9
AsI ₃ (s)	-58.2	213.1	-59.4
AsN (g)	196.3	225.5	168.0
AsO ₂ ⁻¹ (aq)	-429.0	41.4	-350.0
AsO ₄ ⁻³ (aq)	-888.1	-162.8	-648.4
At (s)	0.0	121.3	0.0
Au (g)	366.1	180.4	326.4
Au (s)	0.0	47.4	0.0
Au(CN) ₂ ⁻¹ (aq)	242.3	171.5	285.8
AuBr ₄ ⁻¹ (aq)	-191.6	336.0	-167.4
AuCl ₄ ⁻¹ (aq)	-322.2	266.9	-237.3
AuH (g)	295.0	211.1	265.7
B (g)	562.8	153.3	518.8
B (s)	0.0	5.9	0.0

Compound	ΔH_f°	ΔS°	ΔG_f°
B(CH ₃) ₃ (ℓ)	-143.1	238.9	-32.2
B(CH ₃) ₃ (g)	-124.3	314.6	-36.0
B(OH) ₄ ⁻¹ (aq)	-1344.0	102.5	-1153.3
B ₂ (g)	830.5	201.8	774.0
B ₂ Cl ₄ (ℓ)	-523.0	262.3	-464.8
B ₂ H ₆ (g)	35.6	232.0	86.6
B ₂ O ₂ (g)	-454.8	242.4	-462.3
B ₂ O ₃ (g)	-843.8	279.7	-832.0
B ₂ O ₃ (s)	-1272.8	54.0	-1193.7
B ₃ N ₃ H ₆ (ℓ)	-541.0	199.6	-392.8
B ₄ C (s)	-71.1	27.1	-71.1
B ₅ H ₉ (ℓ)	42.7	184.2	171.7
Ba (ℓ)	5.0	66.7	3.9
Ba (g)	179.1	170.0	146.9
Ba (s)	0.0	62.3	0.0
Ba(BrO ₃) ₂ (s)	-752.7	242.7	-577.4
Ba(BrO ₃) ₂ •H ₂ O (s)	-1054.8	292.5	-824.6
Ba(ClO ₃) ₂ (s)	-680.3	196.7	-531.4
Ba(ClO ₄) ₂ •3H ₂ O (s)	-1691.6	393.3	-1270.7
Ba(IO ₃) ₂ (s)	-1027.2	249.4	-864.8
Ba(IO ₃) ₂ •H ₂ O (s)	-1322.1	297.1	-1104.2
Ba(N ₃) ₂ •H ₂ O (s)	-308.4	188.3	-105.0
Ba(NO ₃) ₂ (s)	-992.1	213.8	-796.7
Ba(OH) ₂ •8H ₂ O (s)	-3342.2	426.8	-2793.2
Ba(ReO ₄) ₂ •4H ₂ O (s)	-3368.1	376.6	-2918.3
Ba ⁺² (aq)	-537.6	9.6	-560.8
Ba ₂ TiO ₄ (s)	-2243.0	196.7	-2133.0
BaBr ₂ (g)	-439.3	330.5	-472.8
BaBr ₂ (s)	-757.3	146.4	-736.8
BaBr ₂ •2H ₂ O (s)	-1366.1	225.9	-1230.5
BaCl ₂ (ℓ)	-832.5	143.5	-790.2
BaCl ₂ (g)	-498.7	325.6	-510.7
BaCl ₂ (s)	-858.1	123.7	-810.4
BaCl ₂ •2H ₂ O (s)	-1460.1	202.9	-1296.5
BaCO ₃ (s witherite)	-1216.3	112.1	-1137.6
BaCrO ₄ (s)	-1446.0	158.6	-1345.3
BaF ₂ (ℓ)	-1171.3	121.3	-1128.4
BaF ₂ (g)	-803.8	301.2	-814.5
BaF ₂ (s)	-1208.8	96.4	-1158.6
BaI ₂ (ℓ)	-585.9	183.7	-587.4
BaI ₂ (g)	-302.9	348.1	-353.4

Compound	ΔH_f°	ΔS°	ΔG_f°
BaI ₂ (s)	-605.4	165.1	-601.4
BaMoO ₄ (s)	-1548.1	138.1	-1439.7
BaO (ℓ)	-491.6	96.6	-471.2
BaO (g)	-123.9	235.4	-144.8
BaO (s)	-548.1	72.1	-520.4
BaS (s)	-460.2	78.2	-456.1
BaSeO ₃ (s)	-1040.6	167.4	-968.2
BaSeO ₄ (s)	-1146.4	175.7	-1044.7
BaSiF ₆ (s)	-2952.2	163.2	-2794.1
BaSiO ₃ (s)	-1623.6	109.6	-1540.3
BaSO ₄ (s)	-1473.2	132.2	-1362.3
BaTiO ₃ (s)	-1659.8	108.0	-1572.4
BaZrO ₃ (s)	-1779.5	124.7	-1694.5
BBr (g)	238.1	224.9	195.4
BBr ₃ (ℓ)	-239.7	229.7	-238.5
BBr ₃ (g)	-205.6	324.1	-232.5
BCl (g)	149.5	213.1	120.9
BCl ₂ F (g)	-645.2	284.5	-631.4
BCl ₃ (ℓ)	-427.2	206.3	-387.4
BCl ₃ (g)	-403.8	290.0	-388.7
BClF ₂ (g)	-890.4	272.0	-876.1
Be (ℓ)	12.1	16.5	10.0
Be (g)	324.3	136.2	286.6
Be (s)	0.0	9.5	0.0
Be(OH) ₂ (s beta)	-905.8	46.0	-816.7
Be ⁺² (aq)	-382.8	-129.7	-379.7
Be ₂ C (s)	-117.2	16.3	-87.9
Be ₂ SiO ₄ (s)	-2149.3	64.3	-2032.6
Be ₃ N ₂ (s cubic)	-588.3	34.1	-533.0
BeAl ₂ O ₄ (s)	-2300.8	66.3	-2178.6
BeBr ₂ (s)	-369.9	106.3	-353.1
BeC ₂ (g)	564.8	218.4	506.3
BeCl ₂ (s beta)	-496.2	75.8	-449.5
BeF ₂ (a alpha)	-1026.8	53.4	-979.5
BeH (g)	326.8	170.9	298.3
BeI ₂ (s)	-192.5	120.5	-209.2
BeO (g)	129.7	197.5	104.2
BeO (s alpha)	-608.4	13.8	-579.1
BeO ₂ ⁻² (aq)	-790.8	159.0	-640.2
BeSO ₄ (s alpha)	-1205.2	78.0	-1093.9
BeSO ₄ •4H ₂ O (s)	-2423.8	233.0	-2080.7

Compound	ΔH_f°	ΔS°	ΔG_f°
BeWO ₄ (s)	-1514.6	88.4	-1405.8
BF (g)	-122.2	200.4	-149.8
BF ₃ (g)	-1137.0	254.0	-1120.4
BF ₄ ⁻¹ (aq)	-1574.9	179.9	-1487.0
BH (g)	449.6	171.8	419.6
BH ₄ ⁻¹ (aq)	48.2	110.5	114.3
Bi (g)	207.1	186.9	168.2
Bi (s)	0.0	56.7	0.0
Bi ₂ O ₃ (s)	-573.9	151.5	-493.7
Bi ₂ S ₃ (s)	-143.1	200.4	-140.6
Bi ₂ Te ₃ (s)	-77.4	260.9	-77.0
Bi ₃ (g)	71.1	349.1	20.8
BiBr ₃ (s)	263.6	225.9	234.3
BiCl ₃ (g)	-265.7	358.7	-256.1
BiCl ₃ (s)	-379.1	177.0	-315.1
BiOCl (s)	-366.9	120.5	-322.2
BiS (g)	179.9	284.5	121.3
BN (g)	647.5	212.2	614.5
BN (s)	-254.4	14.8	-228.5
BO (g)	25.1	203.4	-4.2
BO ₂ (g)	-300.4	229.5	-305.9
BO ₂ ⁻¹ (aq)	-772.4	-37.2	-678.9
Br (g)	111.9	174.9	82.4
Br ⁻¹ (aq)	-121.6	82.4	-104.0
Br ₂ (ℓ)	0.0	152.2	0.0
Br ₂ (g)	30.9	245.4	3.1
Br ₂ Cl ⁻¹ (aq)	-170.3	188.7	-128.5
Br ₃ ⁻¹ (aq)	-130.4	215.5	-107.1
BrCl (g)	14.6	240.0	-1.0
BrF (g)	-93.9	228.9	-109.2
BrF ₃ (ℓ)	-300.8	178.2	-240.6
BrF ₃ (g)	-255.6	292.4	-229.5
BrF ₅ (ℓ)	-458.6	225.1	-351.9
BrO (g)	125.8	237.4	108.2
BrO ⁻¹ (aq)	-94.1	41.8	-33.5
BrO ₃ ⁻¹ (aq)	-83.7	163.2	1.7
BrO ₄ ⁻¹ (aq)	13.0	199.6	118.1
C (g)	716.7	158.0	671.3
C (s diamond)	1.9	2.4	2.9
C (s graphite)	0.0	5.7	0.0
C ⁻¹ (g)	587.9	151.3	550.6

Compound	ΔH_f°	ΔS°	ΔG_f°
C ₁₀ H ₁₈ (g 1-decyne)	41.2	524.5	252.2
C ₁₀ H ₂₀ (ℓ 1-decene)	-174.6	425.0	105.0
C ₁₀ H ₂₀ O (g decanal)	-330.9	578.6	-66.5
C ₁₀ H ₂₂ O (ℓ 1-decanol)	-479.5	430.5	-132.2
C ₁₀ H ₂₂ O (g 1-decanol)	-401.7	597.5	-104.2
C ₁₀ H ₈ (g naphthalene)	150.6	333.1	224.1
C ₁₀ H ₈ (s naphthalene)	78.5	167.4	201.6
C ₁₁ H ₂₄ (ℓ undecane)	-326.6	458.1	22.8
C ₁₁ H ₂₄ (g undecane)	-270.3	583.6	41.6
C ₁₂ H ₁₀ (ℓ biphenyl)	119.2	250.2	259.7
C ₁₂ H ₁₀ (s biphenyl)	100.5	205.9	254.2
C ₁₂ H ₂₂ O ₁₁ (s sucrose)	-2225.5	360.2	-1544.7
C ₁₂ H ₂₆ (ℓ 1-dodecane)	-352.1	490.6	28.1
C ₂ (g)	837.6	199.3	781.6
C ₂ ⁻¹ (g)	443.5	196.5	393.3
C ₂ H ₂ (g acetylene)	226.7	200.8	209.2
C ₂ H ₃ Cl (g vinyl chloride)	35.6	263.9	51.9
C ₂ H ₃ Cl ₃ (g 1,1,1-trichloroethane)	-142.3	320.0	-76.2
C ₂ H ₄ (g ethylene)	52.3	219.2	68.2
C ₂ H ₅ Br (ℓ ethyl bromide)	-90.5	198.7	-25.8
C ₂ H ₅ Br (g ethyl bromide)	-61.9	286.7	-23.9
C ₂ H ₅ OC ₂ H ₅ (ℓ diethyl ether)	-273.2	253.1	-116.7
C ₂ H ₅ OC ₂ H ₅ (g diethyl ether)	-252.1	342.7	-122.3
C ₂ H ₅ OH (ℓ ethanol)	-277.0	161.0	-174.2
C ₂ H ₅ OH (g ethanol)	-234.4	282.6	-167.9
C ₂ H ₆ (g ethane)	-84.7	229.1	-32.8
C ₂ H ₆ O ₂ (ℓ ethylene glycol)	-454.8	166.9	-323.2
C ₂ H ₆ O ₂ (g ethylene glycol)	-389.3	323.6	-304.5
C ₂ O ₄ ⁻² (aq)	-825.1	45.6	-673.9
C ₃ (g)	820.1	237.2	754.4
C ₃ H ₆ (g cyclopropane)	53.3	237.4	104.4
C ₃ H ₇ OH (ℓ 1-propanol)	-304.0	194.6	-170.6
C ₃ H ₇ OH (g 1-propanol)	-256.4	324.7	-161.8
C ₃ H ₈ (g propane)	-103.9	270.2	-23.6
C ₃ O ₂ (ℓ)	-117.3	181.1	-105.0
C ₃ O ₂ (g)	-93.7	276.4	-109.8
C ₄ H ₁₀ (ℓ n-butane)	-147.7	231.0	-15.1
C ₄ H ₁₀ (g n-butane)	-126.2	310.1	-17.2
C ₄ H ₄ O (g furan)	-34.4	267.2	0.9
C ₄ H ₆ (g 1,3-butadiene)	110.2	278.7	150.7
C ₄ H ₈ (g cyclobutane)	26.7	265.4	110.0

Compound	ΔH_f°	ΔS°	ΔG_f°
C ₄ H ₈ (g trans-2-butene)	-11.2	296.5	63.0
C ₄ H ₈ (g cis-2-butene)	-7.0	300.8	65.9
C ₄ H ₈ O (ℓ 2-butanone)	-273.2	238.8	-151.4
C ₄ H ₈ O (g 2-butanone)	-235.4	338.1	-146.1
C ₄ H ₈ O ₂ (ℓ 1,4-dioxane)	-353.4	195.3	-188.1
C ₄ H ₈ O ₂ (g 1,4-dioxane)	-315.1	299.8	-180.8
C ₄ H ₉ OH (ℓ 1-butanol)	-327.1	226.4	-162.5
C ₄ H ₉ OH (g 1-butanol)	-274.7	362.8	-150.8
C ₄ N ₂ (g)	533.5	290.0	510.9
C ₅ H ₁₀ (ℓ cyclopentane)	-105.8	204.3	36.4
C ₅ H ₁₀ (g cyclopentane)	-77.2	292.9	38.6
C ₅ H ₁₂ (ℓ pentane)	-173.1	262.7	-9.3
C ₅ H ₁₂ (g pentane)	-146.4	349.0	-8.4
C ₆ H ₁₀ (ℓ cyclohexene)	-38.8	216.2	101.6
C ₆ H ₁₀ (g cyclohexene)	-5.4	310.8	106.9
C ₆ H ₁₂ (ℓ cyclohexane)	-156.2	204.4	26.7
C ₆ H ₁₂ (g cyclohexane)	-123.1	298.2	31.8
C ₆ H ₁₂ O (ℓ cyclohexanol)	-348.2	199.6	-133.3
C ₆ H ₁₄ (ℓ hexane)	-198.8	296.1	-3.8
C ₆ H ₁₄ (g 3-methylpentane)	-171.6	379.8	-2.1
C ₆ H ₁₄ (g 2-methylpentane)	-174.3	380.5	-5.0
C ₆ H ₁₄ (g hexane)	-167.2	388.4	-0.3
C ₆ H ₁₄ O (ℓ 1-hexanol)	-379.5	289.5	-152.3
C ₆ H ₁₄ O (g 1-hexanol)	-317.6	441.4	-135.6
C ₆ H ₅ COOH (s benzoic acid)	-385.1	167.6	-245.3
C ₆ H ₅ NH ₂ (ℓ aniline)	31.6	191.3	149.1
C ₆ H ₅ NH ₂ (g aniline)	86.9	319.2	166.7
C ₆ H ₅ OH (g phenol)	-96.4	315.6	-32.9
C ₆ H ₅ OH (s phenol)	-165.0	144.0	-50.4
C ₆ H ₆ (ℓ benzene)	49.0	173.3	124.4
C ₆ H ₆ (g benzene)	82.9	269.2	129.7
C ₇ H ₁₄ (ℓ cycloheptane)	-156.8	242.6	54.1
C ₇ H ₁₆ (ℓ 2-methylhexane)	-229.8	323.3	-2.9
C ₇ H ₁₆ (ℓ heptane)	-224.4	326.0	1.8
C ₇ H ₁₆ (g 3-ethylpentane)	-189.7	411.5	11.0
C ₇ H ₁₆ (g 2-methylhexane)	-194.9	420.0	3.2
C ₇ H ₁₆ (g heptane)	-187.8	427.9	8.0
C ₇ H ₈ (ℓ toluene)	12.0	221.0	113.8
C ₇ H ₈ (g toluene)	50.0	320.7	122.0
C ₇ H ₈ O (g p-cresol)	-125.4	347.7	-30.9
C ₇ H ₈ O (g m-cresol)	-132.3	356.8	-40.5

Compound	ΔH_f°	ΔS°	ΔG_f°
C ₇ H ₈ O (g o-cresol)	-128.6	357.6	-37.1
C ₈ H ₁₀ (ℓ ethylbenzene)	-12.5	255.2	119.7
C ₈ H ₁₀ (g ethylbenzene)	29.8	360.5	130.6
C ₈ H ₁₆ (ℓ cyclooctane)	-169.8	262.0	77.8
C ₈ H ₁₈ (ℓ 2-methylheptane)	-255.1	352.1	3.9
C ₈ H ₁₈ (ℓ octane)	-250.0	357.7	7.4
C ₈ H ₁₈ (g 2-methylheptane)	-215.5	455.3	12.8
C ₈ H ₁₈ (g octane)	-208.5	466.7	16.4
C ₈ H ₂₀ Pb (ℓ tetraethyl lead)	53.1	472.5	336.4
C ₈ H ₈ (ℓ styrene)	103.9	237.6	202.4
C ₈ H ₈ (g styrene)	147.4	345.1	213.8
C ₉ H ₂₀ (ℓ nonane)	-275.5	393.7	11.8
C ₉ H ₂₀ (g nonane)	-229.0	505.7	24.8
Ca (ℓ)	10.9	50.7	8.2
Ca (g)	179.3	154.8	145.5
Ca (s)	0.0	41.4	0.0
Ca(ClO ₄) ₂ •4H ₂ O (s)	-1948.9	433.5	-1476.8
Ca(H ₂ PO ₄) ₂ •H ₂ O (s)	-3409.7	259.8	-3058.4
Ca(IO ₃) ₂ (s)	-1002.5	230.1	-839.3
Ca(IO ₃) ₂ •6H ₂ O (s)	-2780.7	451.9	-2267.7
Ca(NO ₃) ₂ (s)	-938.4	193.3	-743.2
Ca(NO ₃) ₂ •2H ₂ O (s)	-1540.8	269.5	-1229.3
Ca(NO ₃) ₂ •3H ₂ O (s)	-1838.0	319.2	-1471.9
Ca(NO ₃) ₂ •4H ₂ O (s)	-2132.3	375.3	-1713.5
Ca(OH) ₂ (s)	-986.2	83.4	-898.5
Ca[Mg(CO ₃) ₂] (s dolomite)	-2326.3	155.2	-2163.6
Ca ⁺¹ (g)	775.3	160.5	733.5
Ca ⁺² (aq)	-542.8	-53.1	-553.5
Ca ₁₀ (PO ₄) ₆ (OH) ₂ (s hydroxyapatite)	-13476.7	780.7	-12677.5
Ca ₁₀ (PO ₄) ₆ F ₂ (s fluorapatite)	-13744.4	775.7	-12983.0
Ca ₂ P ₂ O ₇ (s beta)	-3338.8	189.2	-3132.1
Ca ₂ SiO ₄ (s beta)	-2307.5	127.7	-2192.8
Ca ₂ SiO ₄ (s gamma)	-2317.9	120.8	-2201.2
Ca ₃ (AsO ₄) ₂ (s)	-3298.7	225.9	-3063.1
Ca ₃ (PO ₄) ₂ (s alpha)	-4109.9	240.9	-3875.6
Ca ₃ (PO ₄) ₂ (s beta)	-4120.8	236.0	-3884.8
CaBr ₂ (ℓ)	-663.0	147.9	-649.3
CaBr ₂ (g)	-384.9	314.6	-421.0
CaBr ₂ (s)	-683.3	129.7	-664.1
CaBr ₂ •6H ₂ O (s)	-2506.2	410.0	-2153.1
CaC ₂ (s)	-59.8	70.0	-64.9

Compound	ΔH_f°	ΔS°	ΔG_f°
CaC ₂ O ₄ •H ₂ O (s)	-1674.9	156.5	-1514.0
CaCl ₂ (ℓ)	-774.0	123.9	-732.2
CaCl ₂ (g)	-471.5	290.0	-479.1
CaCl ₂ (s)	-795.8	104.6	-748.1
CaCO ₃ (s aragonite)	-1207.1	88.7	-1127.8
CaCO ₃ (s calcite)	-1206.9	92.9	-1128.8
CaCrO ₄ (s)	-1379.1	133.9	-1277.4
CaF ₂ (ℓ)	-1184.1	92.6	-1142.2
CaF ₂ (g)	-782.4	273.6	-795.0
CaF ₂ (s)	-1219.6	68.9	-1167.3
CaH ₂ (s)	-186.2	41.8	-147.3
CaHPO ₄ (s)	-1814.4	111.4	-1681.3
CaHPO ₄ •2H ₂ O (s)	-2403.6	189.5	-2154.8
CaI ₂ (ℓ)	-500.2	179.0	-506.5
CaI ₂ (g)	-258.2	327.4	-308.8
CaI ₂ (s)	-536.8	145.3	-533.1
CaMoO ₄ (s)	-1541.4	122.6	-1434.7
CaO (ℓ)	-557.4	62.3	-533.0
CaO (s)	-635.1	38.2	-603.5
CaO•2Al ₂ O ₃ (s)	-3977.7	177.8	-3770.6
CaO•2B ₂ O ₃ (s)	-3360.3	134.7	-3167.1
CaO•Al ₂ O ₃ (s)	-2326.3	114.2	-2208.7
CaO•B ₂ O ₃ (s)	-2031.0	104.9	-1924.1
CaO•Fe ₂ O ₃ (s)	-1520.3	145.4	-1412.8
CaO•MgO•2SiO ₂ (s diopside)	-3206.2	142.9	-3032.1
CaO•V ₂ O ₅ (s)	-2329.3	179.1	-2169.7
CaS (s)	-474.9	56.5	-469.9
CaSe (s)	-368.2	66.9	-363.2
CaSeO ₄ •2H ₂ O (s)	-1706.7	221.8	-1487.0
CaSiO ₃ (s pseudowollastonite)	-1628.4	87.4	-1544.7
CaSiO ₃ (s wollastonite)	-1634.9	81.9	-1549.7
CaSO ₃ •H ₂ O (s)	-1752.7	184.1	-1555.2
CaSO ₄ (s alpha soluble)	-1425.2	108.4	-1313.5
CaSO ₄ (s anhydrite insoluble)	-1434.1	106.7	-1321.9
CaSO ₄ (s beta soluble)	-1420.8	108.4	-1309.1
CaSO ₄ (s)	-1434.5	106.5	-1322.0
CaSO ₄ •0.5H ₂ O (s alpha macro)	-1576.7	130.5	-1436.8
CaSO ₄ •0.5H ₂ O (s beta micro)	-1574.7	134.3	-1435.9
CaSO ₄ •2H ₂ O (s)	-2022.6	194.1	-1797.5
CaTiO ₃ (s perovskite)	-1660.6	93.6	-1575.3
CaTiSiO ₅ (s sphene)	-2603.3	129.2	-2461.9

Compound	ΔH_f°	ΔS°	ΔG_f°
CaWO ₄ (s)	-1645.2	126.4	-1538.5
CaZrO ₃ (s)	-1766.9	100.1	-1681.1
CBr (g)	510.5	233.5	464.4
CCl (g)	502.1	224.3	468.6
CCl ₂ F ₂ (g dichlorodifluoromethane)	-477.4	300.8	-439.4
Cd (g)	112.0	167.6	77.5
Cd (s alpha)	-0.6	51.8	-0.6
Cd (s gamma)	0.0	51.8	0.0
Cd ⁺² (aq)	-75.9	-73.2	-77.6
Cd(CN) ₄ ⁻² (aq)	428.0	322.2	507.5
Cd(NH ₃) ₄ ⁺² (aq)	-450.2	336.4	-226.4
CdBr ₂ (s)	-316.2	137.2	-296.3
CdBr ₂ •4H ₂ O (s)	-1492.6	316.3	-1248.0
CdCl ₂ (s)	-391.5	115.3	-344.0
CdCl ₂ •2.5H ₂ O (s)	-1131.9	227.2	-944.1
CdCl ₃ ⁻¹ (aq)	-561.1	202.9	-487.0
CdCO ₃ (s)	-750.6	92.5	-669.4
CdF ₂ (s)	-700.4	77.4	-647.7
CdI ₂ (s)	-202.9	161.1	-201.4
CdI ₄ ⁻² (aq)	-341.8	326.4	-315.9
CdO (s)	-258.2	54.8	-228.5
CdS (s)	-161.9	64.9	-156.5
CdSb (s)	-14.4	92.9	-13.0
CdSeO ₃ (s)	-575.3	142.3	-497.9
CdSeO ₄ (s)	-633.0	164.4	-531.8
CdSiO ₃ (s)	-1189.1	97.5	-1105.4
CdSO ₄ (s)	-933.3	123.0	-822.8
CdSO ₄ •8/3H ₂ O (s)	-1729.4	229.6	-1465.3
CdSO ₄ •H ₂ O (s)	-1239.6	154.0	-1068.8
CdTe (s)	-92.5	100.4	-92.1
Ce (g)	422.6	191.7	384.9
Ce (s)	0.0	72.0	0.0
Ce ⁺³ (aq)	-696.2	-205.0	-672.0
Ce ⁺⁴ (aq)	-537.2	-301.3	-503.8
Ce ₂ (C ₂ O ₄) ₃ •10H ₂ O (s)	-6782.3	799.1	-5903.6
Ce ₂ O ₃ (s)	-1796.2	150.6	-1706.2
CeC ₂ (g)	569.9	267.8	514.2
CeC ₂ (s)	-62.8	83.7	-63.6
CeC ₄ (g)	702.9	305.4	636.0
CeCl ₃ (s)	-1053.5	150.6	-977.8
CeCrO ₃ (s)	-1539.7	104.6	-1451.9

Compound	ΔH_f°	ΔS°	ΔG_f°
CeO ₂ (s)	-1088.7	62.3	-1024.7
CeS (g)	131.4	260.2	84.5
CeS (s)	-459.4	78.2	-451.5
CeS ₂ (g)	10.0	292.9	-36.8
CF (g)	255.2	212.9	221.8
CF ⁺¹ (g)	1149.3	201.3	1115.0
CF ₂ (g)	-182.0	240.7	-191.6
CF ₂ ⁺¹ (g)	941.8	246.7	924.3
CH ₃ CH ₂ CHOHCH ₃ (ℓ 2-butanol)	-342.6	225.1	-177.0
CH ₃ CH ₂ CHOHCH ₃ (g 2-butanol)	-292.6	359.0	-167.6
CH ₃ CHO (ℓ acetaldehyde)	-192.3	160.3	-128.2
CH ₃ CHO (g acetaldehyde)	-166.4	264.2	-133.3
CH ₃ CHOHCH ₃ (ℓ 2-propanol)	-317.9	180.6	-180.3
CH ₃ CHOHCH ₃ (g 2-propanol)	-272.4	309.9	-173.4
CH ₃ COCH ₃ (ℓ acetone)	-247.6	200.4	-155.7
CH ₃ COCH ₃ (g acetone)	-216.7	294.9	-153.1
CH ₃ COO ⁻¹ (aq)	-486.0	86.6	-369.3
CH ₃ COOH (ℓ acetic acid)	-484.1	159.8	-390.0
CH ₃ COOH (g acetic acid)	-434.8	282.5	-376.7
CH ₃ OCH ₃ (g dimethyl ether)	-184.1	267.1	-112.9
CH ₃ OH (ℓ methanol)	-239.0	127.2	-166.8
CH ₃ OH (g methanol)	-201.1	239.7	-162.4
CH ₄ (g methane)	-74.9	186.3	-50.8
Cl (g)	121.3	165.1	105.3
Cl ⁻¹ (aq)	-167.2	56.5	-131.3
Cl ₂ (g)	0.0	223.0	0.0
Cl ₂ F ₆ (g)	-339.3	489.5	-237.2
Cl ₂ O (g)	80.3	267.9	97.5
ClF (g)	-54.5	217.8	-55.9
ClF ₃ (g)	-159.0	281.5	-118.8
ClF ₃ •HF (g)	-450.6	359.8	-384.1
ClF ₅ (g)	-238.5	310.6	-146.4
ClO (g)	101.2	226.6	97.5
ClO ⁻¹ (aq)	-107.1	41.8	-36.8
ClO ₂ (g)	102.5	256.8	120.3
ClO ₂ ⁻¹ (aq)	-66.5	101.3	17.2
ClO ₃ ⁻¹ (aq)	-99.2	162.3	-3.4
ClO ₃ F (g)	-27.2	278.9	44.9
ClO ₄ ⁻¹ (aq)	-129.3	182.0	-8.6
CN (g)	435.1	202.6	405.0
CN ⁺¹ (g)	1802.9	213.3	1763.1

Compound	ΔH_f°	ΔS°	ΔG_f°
CN ⁻¹ (aq)	150.6	94.1	172.4
CN ⁻¹ (g)	60.7	195.8	38.7
CN ₂ (g)	581.6	231.6	573.2
CNBr (g)	181.4	247.2	160.6
CNCl (g)	132.2	235.5	125.5
CNI (g)	225.1	256.6	196.2
CNI (s)	160.3	128.9	169.4
CO (g)	-110.5	197.9	-137.3
Co (s face centered cubic)	0.5	30.7	0.3
Co (s hexagonal)	0.0	30.0	0.0
Co(IO ₃) ₂ •2H ₂ O (s)	-1082.0	267.8	-795.8
Co(NH ₃) ₆ ⁺³ (aq)	-584.9	146.4	-157.3
Co(OH) ₂ (s pink)	-539.7	79.5	-454.4
Co ⁺² (aq)	-58.2	-113.0	-54.4
Co ⁺³ (aq)	92.1	-305.4	133.9
CO ₂ (aq undissoc)	-413.8	117.6	-386.0
CO ₂ (g)	-393.5	213.7	-394.4
CO ₃ ⁻² (aq)	-677.1	-56.9	-527.9
Co ₃ O ₄ (s)	-910.0	114.2	-795.0
COBr ₂ (g)	-96.2	309.0	-110.9
COCl ₂ (g)	-220.9	283.8	-206.8
CoCl ₂ (s)	-312.5	109.2	-269.9
CoCl ₂ •2H ₂ O (s)	-923.0	188.3	-764.8
CoCl ₂ •6H ₂ O (s)	-2115.4	343.1	-1725.5
CoCl ₃ (g)	-163.6	334.1	-154.5
COF ₂ (g)	-640.2	258.7	-624.6
CoF ₂ (s)	-692.0	82.0	-647.3
CoF ₃ (s)	-790.8	94.6	-719.7
CoO (s)	-237.9	53.0	-214.2
COS (g)	-138.4	231.5	-165.6
CoSi (s)	-100.4	43.1	-98.7
CoSO ₄ (s)	-888.3	118.0	-782.4
CoSO ₄ •6H ₂ O (s)	-2683.6	367.6	-2235.7
CoSO ₄ •7H ₂ O (s)	-2979.9	406.1	-2473.8
Cr (ℓ)	26.1	36.2	22.3
Cr (g)	397.5	174.2	352.6
Cr (s)	0.0	23.6	0.0
Cr ₂₃ C ₆ (s)	-364.8	610.0	-373.6
Cr ₂ N (s)	-125.5	64.9	-102.2
Cr ₂ O ₃ (ℓ)	-1018.4	125.6	-950.1
Cr ₂ O ₃ (s)	-1134.7	81.2	-1053.1

Compound	ΔH_f°	ΔS°	ΔG_f°
$\text{Cr}_2\text{O}_7^{-2}(\text{aq})$	-1490.3	261.9	-1301.2
$\text{Cr}_3\text{C}_2(\text{s})$	-85.4	85.4	-86.3
$\text{Cr}_7\text{C}_3(\text{s})$	-161.9	200.8	-166.9
$\text{CrCl}_2(\text{s})$	-395.4	115.3	-356.1
$\text{CrCl}_3(\text{s})$	-556.5	123.0	-486.1
$\text{CrF}_3(\text{s})$	-1159.0	93.9	-1087.8
$\text{CrN}(\text{g})$	505.0	230.5	471.9
$\text{CrN}(\text{s})$	-117.2	37.7	-92.8
$\text{CrO}(\text{g})$	188.3	239.2	154.6
$\text{CrO}_2(\text{g})$	-75.3	269.1	-87.4
$\text{CrO}_2\text{Cl}_2(\ell)$	-579.5	221.8	-510.9
$\text{CrO}_2\text{Cl}_2(\text{g})$	-538.1	329.7	-501.7
$\text{CrO}_3(\text{g})$	-292.9	266.1	-273.5
$\text{CrO}_4^{-2}(\text{aq})$	-881.2	50.2	-727.9
$\text{Cs}(\ell)$	2.1	92.1	0.0
$\text{Cs}(\text{g})$	76.6	175.5	49.8
$\text{CS}(\text{g})$	234.3	210.5	184.1
$\text{Cs}(\text{s})$	0.0	85.1	0.0
$\text{Cs}^{+1}(\text{aq})$	458.6	169.7	427.2
$\text{CS}_2(\ell)$	89.7	151.3	65.3
$\text{CS}_2(\text{g})$	117.1	237.8	66.9
$\text{Cs}_2\text{O}(\text{g})$	-92.1	318.0	-104.6
$\text{CsAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}(\text{s})$	-6064.7	686.2	-5098.2
$\text{CsBr}(\text{s})$	-405.7	113.4	-384.9
$\text{CsCl}(\ell)$	-434.3	101.7	-406.3
$\text{CsCl}(\text{g})$	-240.2	256.0	-257.7
$\text{CsCl}(\text{s})$	-442.8	101.2	-414.2
$\text{CsF}(\ell)$	-543.8	90.1	-515.1
$\text{CsF}(\text{g})$	-356.5	243.1	-373.2
$\text{CsF}(\text{s})$	-554.8	88.3	-525.5
$\text{CsH}(\text{g})$	121.3	214.4	101.7
$\text{CsI}(\text{s})$	-336.8	125.5	-333.7
$\text{CsOH}(\ell)$	-406.0	118.5	-365.9
$\text{CsOH}(\text{g})$	-259.4	255.1	-259.8
$\text{CsOH}(\text{s})$	-416.7	98.7	-362.3
$\text{Cu}(\text{g})$	338.3	166.3	298.6
$\text{Cu}(\text{s})$	0.0	33.2	0.0
$\text{Cu}(\text{C}_2\text{O}_4)_2^{-2}(\text{aq})$	-1592.0	146.4	-1336.0
$\text{Cu}(\text{IO}_3)_2 \cdot \text{H}_2\text{O}(\text{s})$	-692.0	247.3	-468.6
$\text{Cu}(\text{NH}_3)^{+2}(\text{aq})$	-38.9	12.1	15.6
$\text{Cu}(\text{NH}_3)_2^{+2}(\text{aq})$	-142.3	111.3	-30.5

Compound	ΔH_f°	ΔS°	ΔG_f°
$\text{Cu}(\text{NH}_3)_3^{+2}(\text{aq})$	-245.6	199.6	-73.1
$\text{Cu}(\text{NH}_3)_4^{+2}(\text{aq})$	-348.5	273.6	-111.3
$\text{Cu}(\text{OH})_2(\text{s})$	-450.2	108.4	-372.8
$\text{Cu}^{+1}(\text{aq})$	71.7	40.6	50.0
$\text{Cu}^{+2}(\text{aq})$	64.8	-99.6	65.5
$\text{Cu}_2(\text{g})$	484.2	241.5	432.0
$\text{Cu}_2\text{O}(\text{s})$	-168.6	93.1	-146.0
$\text{Cu}_2\text{S}(\text{s alpha})$	-79.5	120.9	-86.2
$\text{CuBr}(\text{s})$	-104.6	96.1	-100.8
$\text{CuCl}(\text{s})$	-137.2	86.2	-119.9
$\text{CuCl}_2(\text{s})$	-205.9	108.1	-161.9
$\text{CuCl}_2 \cdot 2\text{H}_2\text{O}(\text{s})$	-821.3	167.4	-656.1
$\text{CuCN}(\text{s})$	95.0	90.0	108.4
$\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2(\text{s malachite})$	-1051.4	186.2	-893.7
$\text{CuF}(\text{s})$	-192.5	64.9	-171.5
$\text{CuF}_2(\text{s})$	-548.9	68.6	-499.2
$\text{CuFe}_2\text{O}_4(\text{s})$	-965.2	141.0	-858.8
$\text{CuFeO}_2(\text{s})$	-532.6	88.7	-479.9
$\text{CuI}(\text{s})$	-67.8	96.7	-69.5
$\text{CuN}_3(\text{s})$	279.1	100.4	344.8
$\text{CuO}(\text{s})$	-157.3	42.6	-129.7
$\text{CuS}(\text{s})$	-53.1	66.5	-53.6
$\text{CuSO}_4(\text{s})$	-771.4	108.8	-661.9
$\text{CuSO}_4 \cdot 3\text{H}_2\text{O}(\text{s})$	-1684.3	221.3	-1400.2
$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}(\text{s})$	-2279.7	300.4	-1880.1
$\text{CuSO}_4 \cdot \text{H}_2\text{O}(\text{s})$	-1085.8	146.0	-918.2
$\text{Dy}(\text{g})$	248.5	196.5	254.4
$\text{Dy}(\text{s})$	0.0	75.3	0.0
$\text{Dy}_2\text{O}_3(\text{s})$	-1863.1	149.8	-1771.5
$\text{DyC}_2(\text{s})$	862.3	267.8	808.4
$\text{DyCl}_3 \cdot 6\text{H}_2\text{O}(\text{s})$	-2870.2	401.7	-2451.8
$\text{Er}(\text{g})$	317.2	195.5	281.2
$\text{Er}(\text{s})$	0.0	73.2	0.0
$\text{Er}^{+3}(\text{aq})$	-705.4	-244.3	-669.1
$\text{Er}_2\text{O}_3(\text{s})$	-1897.9	155.6	-1808.7
$\text{ErC}_2(\text{g})$	578.2	263.6	524.7
$\text{ErCl}_3 \cdot 6\text{H}_2\text{O}(\text{s})$	-2874.4	398.7	-2454.3
$\text{Eu}(\text{g})$	175.3	188.7	142.3
$\text{Eu}(\text{s})$	0.0	77.8	0.0
$\text{Eu}^{+2}(\text{aq})$	-523.0	4.2	-540.2
$\text{Eu}^{+3}(\text{aq})$	-605.0	-221.8	-574.0

Compound	ΔH_f°	ΔS°	ΔG_f°
Eu ₂ O ₃ (s monoclinic)	-1651.4	146.4	-1556.9
Eu ₃ O ₄ (s)	-2271.9	205.0	-2142.2
EuC ₂ (s)	-62.8	100.4	-66.9
EuCl ₃ •6H ₂ O (s)	-2784.9	407.1	-2366.1
EuO (s)	-592.0	62.8	-556.9
F (g)	79.0	158.7	61.9
F ⁻¹ (aq)	-332.6	-13.8	-278.8
F ⁻¹ (g)	-255.6	145.5	-262.3
F ₂ (g)	0.0	202.7	0.0
Fe (ℓ)	13.1	34.3	11.1
Fe (s alpha)	0.0	27.3	0.0
Fe(CN) ₆ ⁻³ (aq)	561.9	270.3	729.3
Fe(CN) ₆ ⁻⁴ (aq)	455.6	95.0	694.9
Fe(CO) ₅ (ℓ)	-774.0	338.1	-705.4
Fe(CO) ₅ (g)	-733.9	445.2	-697.3
Fe(OH) ⁺² (aq)	-290.8	-142.3	-229.4
Fe ⁺² (aq)	-89.1	-137.7	-78.9
Fe ⁺³ (aq)	-48.5	-315.9	-4.6
Fe ₂ (SO ₄) ₃ (s)	-2581.5	307.5	-2263.1
Fe ₂ O ₃ (s hematite)	-824.3	87.4	-742.2
Fe ₂ SiO ₄ (s fayalite)	-1479.9	145.2	-1379.1
Fe ₃ C (s alpha-cementite)	25.1	104.6	20.1
Fe ₃ O ₄ (s magnetite)	-1118.4	146.4	-1015.5
Fe ₃ Si (s)	-93.7	103.8	-94.6
Fe ₄ N (s)	-10.5	156.1	3.8
Fe ₇ S ₈ (s pyrrhotite)	-736.4	485.8	-748.5
FeAl ₂ O ₄ (s)	-1966.5	106.3	-1849.3
FeAsS (s)	-41.8	121.3	-50.2
FeBr ₂ (s)	-249.8	140.7	-237.2
FeCl ₂ (s)	-341.8	118.0	-302.3
FeCl ₃ (s)	-399.5	142.3	-334.1
FeCO ₃ (s siderite)	-740.6	92.9	-666.7
FeCr ₂ O ₄ (s)	-1444.7	146.0	-1343.9
FeF ₂ (s)	-702.9	87.0	-661.1
FeF ₃ (s)	-1041.8	98.3	-970.7
FeI ₂ (s)	-104.6	167.4	-113.0
FeMoO ₄ (s)	-1075.3	129.3	-974.9
FeO (s)	-272.0	60.8	-251.5
FeOH ⁺¹ (aq)	-324.7	-29.3	-277.4
FePO ₄ •2H ₂ O (s strengite)	-1888.2	171.3	-1657.7
FeS (s pyrrhotite)	-100.0	60.3	-100.4

Compound	ΔH_f°	ΔS°	ΔG_f°
FeS ₂ (s pyrite)	-178.2	52.9	-166.9
FeSi (s)	-73.6	46.0	-73.6
FeSi ₂ (s beta-lebanite)	-81.2	55.7	-78.2
FeSO ₄ (s)	-928.4	120.9	-825.1
FeSO ₄ •7H ₂ O (s)	-3014.6	409.2	-2510.3
FeWO ₄ (s)	-1154.8	131.8	-1054.4
FNO ₃ (g)	10.5	292.9	73.6
Fr (g)	72.8	181.9	46.7
Fr (s)	0.0	94.1	0.0
Fr ₂ O (s)	-338.9	156.9	-299.2
Ga (g)	277.0	169.0	238.9
Ga (s)	0.0	40.9	0.0
Ga(OH) ₃ (s)	-964.4	100.4	-831.4
Ga ⁺³ (aq)	-211.7	-331.0	-159.0
Ga ₂ O ₃ (s rhombic)	-1089.1	85.0	-998.3
GaAs (s)	-71.1	64.2	-67.8
GaBr (g)	-49.8	251.9	-90.0
GaBr ₃ (s)	-386.6	179.9	-359.8
GaBr ₄ ⁻¹ (aq)	-661.9	36.0	-550.2
GaCl (g)	-79.9	240.2	-106.3
GaCl ₃ (s)	-524.7	142.3	-454.8
GaF ₃ (s)	-1163.2	83.7	-1085.3
GaH (g)	220.5	195.4	193.7
GaN (g)	175.7	225.9	150.6
GaO (g)	279.5	231.0	253.6
GaSb (s)	-41.8	76.1	-38.9
Gd (g)	397.5	194.2	359.8
Gd (s)	0.0	68.1	0.0
Gd ⁺³ (aq)	-686.2	-205.9	-661.1
Gd ₂ (SO ₄) ₃ •8H ₂ O (s)	-6330.4	651.9	-5531.3
GdCl ₃ •6H ₂ O (s)	-2866.0	408.2	-2451.8
Ge (g)	376.6	167.8	336.0
Ge (s)	0.0	31.1	0.0
Ge ₂ (g)	473.0	252.7	416.3
GeBr ₂ (g)	-62.8	331.0	-106.7
GeBr ₄ (ℓ)	-347.7	280.8	-331.4
GeBr ₄ (g)	-300.0	396.1	-318.0
GeCl (g)	154.8	246.0	125.5
GeCl ₄ (ℓ)	-531.8	245.6	-462.8
GeCl ₄ (g)	-495.8	347.6	-457.3
GeF ₄ (g)	90.8	217.0	113.4

Compound	ΔH_f°	ΔS°	ΔG_f°
GeI ₂ (g)	46.9	318.0	-4.2
GeI ₂ (s)	-87.9	133.9	-83.7
GeI ₄ (g)	-56.9	428.8	-106.3
GeI ₄ (s)	-141.8	271.1	-144.4
GeO (g)	-46.2	224.2	-73.2
GeO (s brown)	-212.1	50.2	-237.2
GeO ₂ (s hexagonal)	-551.0	55.3	-497.1
GeP (s)	-20.9	62.8	-16.7
GeS (s)	-69.0	71.1	-71.6
H ⁺ (aq)	0.0	0.0	0.0
H ₂ (g)	0.0	130.6	0.0
H ₂ AsO ₄ ⁻¹ (aq)	-909.6	117.2	-753.3
H ₂ CS ₃ (ℓ)	25.1	223.0	27.8
H ₂ MoO ₄ (g)	-851.0	355.6	-787.4
H ₂ O (ℓ)	-285.8	69.9	-237.2
H ₂ O (g)	-241.8	188.7	-228.6
H ₂ O ₂ (ℓ)	-187.8	109.6	-120.4
H ₂ O ₂ (g)	-136.1	232.9	-105.5
H ₂ PO ₄ ⁻¹ (aq)	-1296.3	90.4	-1130.4
H ₂ S (g)	-20.2	205.8	-33.1
H ₂ Se (g)	29.7	218.9	15.9
H ₂ SiO ₃ (s)	-1188.7	133.9	-1092.4
H ₂ SO ₄ (ℓ)	-814.0	156.9	-690.1
H ₂ SO ₄ (g)	-740.6	289.1	-656.1
H ₂ VO ₄ ⁻¹ (aq)	-1174.0	121.3	-1020.9
H ₂ WO ₄ (g)	-905.4	351.5	-839.7
H ₂ WO ₄ (s)	-1131.8	146.4	-1004.2
H ₃ BO ₃ (s)	-1094.3	88.8	-969.0
H ₃ PO ₄ (ℓ)	-1254.4	150.6	-1111.7
H ₃ PO ₄ (s)	-1266.9	110.5	-1112.5
H ₄ SiO ₄ (s)	-1481.1	192.5	-1333.0
HAsO ₄ ⁻² (aq)	-906.3	-1.7	-714.7
HBO ₂ (s monoclinic)	-794.3	37.7	-723.4
HBO ₂ (s orthorhombic)	-788.8	50.2	-721.7
HBr (g)	-36.3	198.7	-53.4
HCl (g)	-92.3	186.8	-95.3
HCIO (g)	-92.1	236.6	-79.5
HCN (ℓ)	108.9	112.8	124.9
HCN (g)	135.1	201.7	124.7
HCO ₃ ⁻¹ (aq)	-692.0	91.2	-586.9
HCrO ₄ ⁻¹ (aq)	-878.2	184.1	-764.8

Compound	ΔH_f°	ΔS°	ΔG_f°
He (g)	0.0	126.0	0.0
HF (g)	-271.1	173.7	-273.2
Hf (g)	619.2	186.8	576.6
Hf (s hexagonal)	0.0	43.6	0.0
HfB ₂ (s)	-336.0	42.7	-332.2
HfCl ₄ (s)	-990.4	190.8	-901.3
HfF ₄ (s monoclinic)	-1930.5	113.0	-1830.5
HfO ₂ (s)	-1144.7	59.3	-1027.2
Hg (ℓ)	0.0	76.0	0.0
Hg (g)	61.3	174.9	31.9
Hg ⁺¹ (aq)	171.1	-32.2	164.4
Hg ₂ ⁺² (aq)	172.4	84.5	153.5
Hg(CH ₃) ₂ (ℓ)	59.8	209.2	140.2
Hg(CH ₃) ₂ (g)	94.4	305.4	146.0
Hg ₂ (N ₃) ₂ (s)	594.1	205.0	746.4
Hg ₂ Br ₂ (s)	-206.9	218.7	-181.1
Hg ₂ Cl ₂ (s)	-265.2	192.5	-210.8
Hg ₂ CO ₃ (s)	-553.5	179.9	-468.2
Hg ₂ F ₂ (s)	-485.3	159.0	-426.8
Hg ₂ I ₂ (s)	-121.3	242.7	-111.0
Hg ₂ SO ₄ (s)	-743.1	200.7	-625.9
HgBr ₂ (s)	-170.7	170.3	-153.1
HgCl (g)	84.1	259.8	62.8
HgCl ₂ (s)	-224.3	146.0	-178.7
HgF ₂ (s)	-422.6	116.3	-372.4
HgH (g)	240.0	219.5	216.0
HgI (g)	132.4	281.4	88.5
HgI ₂ (g)	-17.2	336.0	-59.8
HgI ₂ (s red)	-105.4	181.2	-101.7
HgO (s red hexagonal)	-89.5	71.1	-58.2
HgO (s red orthorhombic)	-90.8	70.3	-58.6
HgO (s yellow)	-90.5	71.1	-58.4
HgS (s black)	-53.6	88.3	-47.7
HgS (s red)	-58.2	82.4	-50.6
HgSe (g)	75.7	267.0	31.4
HgSe (s)	-46.0	94.1	-38.1
HgTe (s)	-33.9	106.7	-28.0
HI (g)	26.5	206.5	1.7
HN ₂ O ₂ ⁻¹ (aq)	-39.3	142.3	76.2
HN ₃ (g)	294.1	238.9	328.0
HNCO (g)	-116.7	238.1	-107.4

Compound	ΔH_f°	ΔS°	ΔG_f°
HNCS (g)	127.6	247.7	113.0
HNO ₂ (g cis)	-76.6	249.3	-41.8
HNO ₂ (g trans)	-78.7	249.2	-43.9
HNO ₃ (ℓ)	-173.2	155.6	-79.9
HNO ₃ (g)	-135.1	266.3	-74.8
Ho (g)	300.8	195.5	264.9
Ho (s)	0.0	75.3	0.0
Ho ⁺³ (aq)	-705.0	-226.8	-673.6
Ho ₂ O ₃ (s)	-1880.7	158.2	-1791.2
HoC ₂ (s)	-108.8	96.2	-111.7
HoCl ₃ •6H ₂ O (s)	-2878.2	406.2	-2460.2
HOI (g)	-98.3	226.7	-85.7
HPO ₄ ⁻² (aq)	-1292.1	-33.5	-1089.3
HReO ₄ (s)	-762.3	158.2	-664.8
HS ⁻¹ (aq)	-17.6	62.8	12.1
HSe ⁻¹ (aq)	15.9	79.5	43.9
HSeO ₃ ⁻¹ (aq)	-514.6	135.1	-411.5
HSeO ₄ ⁻¹ (aq)	-581.6	149.4	-452.3
HSO ₃ ⁻¹ (aq)	-626.2	139.8	-527.8
HSO ₄ ⁻¹ (aq)	-887.3	131.8	-755.9
HSO ₃ F (g)	-753.1	297.1	-690.4
HVO ₄ ⁻² (aq)	-1159.0	16.7	-974.9
I (g)	106.8	180.7	70.3
I ⁻¹ (aq)	-55.2	111.3	-51.6
I ₂ (g)	62.4	260.6	19.4
I ₂ (s)	0.0	116.1	0.0
IBr (g)	40.8	258.7	3.7
ICl (ℓ)	-23.9	135.1	-13.6
ICl (g)	17.8	247.4	-5.4
ICl ₃ (s)	-89.5	167.4	-22.3
IF (g)	-95.7	236.1	-118.5
IF ₅ (g)	-840.2	334.7	-771.5
IF ₇ (g)	-943.9	346.4	-818.4
In (g)	243.3	173.7	208.7
In (s)	0.0	57.8	0.0
In(OH) ⁺² (aq)	-370.3	-87.9	-313.0
In(OH) ₂ ⁺² (aq)	-619.2	25.1	-525.1
In ₂ (SO ₄) ₃ (s)	-2786.5	272.0	-2439.3
In ⁺³ (aq)	-105.0	-151.0	-98.0
In ₂ O ₃ (s)	-925.8	104.2	-830.7
In ₂ S (g)	62.8	318.0	13.0

Compound	ΔH_f°	ΔS°	ΔG_f°
In ₂ S ₃ (s)	-426.8	163.6	-412.5
InAs (s)	-58.6	75.7	-53.6
InBr (g)	-56.9	259.4	-94.3
InBr (s)	-175.3	113.0	-169.0
InH (g)	215.5	207.5	190.3
InI (g)	7.5	267.2	-37.7
InI (s)	-116.3	129.7	-120.5
InO (g)	387.0	236.4	364.4
InP (s)	-88.7	59.8	-77.0
InS (s)	-138.1	66.9	-131.8
InSb (s)	-30.5	86.2	-25.5
IO (g)	175.1	245.4	149.8
IO ⁻¹ (aq)	-107.5	-5.4	-38.5
IO ₃ ⁻¹ (aq)	-221.3	118.4	-128.0
IO ₄ ⁻¹ (aq)	-151.5	222.0	-58.5
Ir (g)	665.3	193.5	20.8
Ir (s)	0.0	35.5	0.0
IrCl ₃ (g)	104.6	376.6	100.4
IrCl ₃ (s)	-245.6	113.0	-179.9
IrF ₆ (g)	-543.9	357.7	-460.2
IrF ₆ (s)	-579.7	247.7	-461.7
K (ℓ)	2.3	71.5	0.3
K (g)	89.1	90.0	60.7
K (s)	0.0	64.7	0.0
K ⁺¹ (aq)	-252.4	102.5	-283.3
K ₂ B ₄ O ₇ (s)	-3334.2	208.4	-3136.7
K ₂ CO ₃ (s)	-1150.2	155.5	-1064.4
K ₂ O (s)	-363.2	94.1	-322.2
K ₂ O ₂ (s)	-495.8	113.0	-429.7
K ₂ SiO ₃ (s)	-1548.1	146.2	-1455.6
K ₂ SO ₄ (s)	-1433.7	175.7	-1316.4
K ₃ AlCl ₆ (s)	-2092.0	376.6	-1938.5
KAl(SO ₄) ₂ (s)	-2465.4	204.6	-2235.5
KAl(SO ₄) ₂ •12H ₂ O (s)	-6057.3	687.4	-5137.1
KAlCl ₄ (s)	-1196.6	196.7	-1096.2
KBF ₄ (s)	-1887.0	133.9	-1784.9
KBH ₄ (s)	-226.8	106.6	-159.8
KBO ₂ (s)	-995.0	80.0	-978.6
KBr (s)	-392.2	96.4	-379.2
KBrO ₃ (s)	-332.2	149.2	-243.5
KCl (g)	-215.9	239.5	-235.1

Compound	ΔH_f°	ΔS°	ΔG_f°
KCl (s)	-435.9	82.7	-408.3
KClO ₃ (s)	-391.2	143.0	-289.9
KClO ₄ (s)	-430.1	151.0	-300.4
KCN (s)	-113.5	127.8	-102.1
KF (s)	-568.6	66.6	-538.9
KF•2H ₂ O (s)	-1159.0	150.6	-1015.5
KH (s)	-57.8	50.2	-34.1
KH ₂ AsO ₄ (s)	-1136.0	155.1	-991.6
KHF ₂ (s)	-931.4	104.3	-863.2
KI (s)	-327.7	106.4	-322.3
KIO ₃ (s)	-508.4	151.5	-425.5
KMnO ₄ (s)	-813.4	171.7	-713.8
KNO ₃ (s)	-492.7	132.9	-393.1
KO ₂ (s)	-284.5	122.6	-240.6
KOH (s)	-425.9	78.9	-379.1
Kr (g)	0.0	164.0	0.0
La (g)	431.0	182.3	393.6
La (s)	0.0	56.9	0.0
La(IO ₃) ₃ (s)	-1397.5	259.4	-1131.4
La ⁺³ (aq)	-707.1	-217.6	-683.7
La ₂ (SeO ₄) ₃ (s)	-2879.4	338.9	-2633.8
La ₂ O ₃ (s)	-1793.7	127.3	-1705.8
La ₂ Te ₃ (s)	-723.8	231.6	-714.6
LaC ₂ (g)	587.4	255.2	531.8
LaC ₂ (s)	-71.1	71.1	-72.4
LaCl ₃ •7H ₂ O (s)	-3178.6	462.8	-2713.3
LaS (s)	-456.1	73.2	-451.5
Li (ℓ)	2.4	33.9	0.9
Li (g)	160.7	138.7	128.0
Li (s)	0.0	29.1	0.0
Li ⁺¹ (aq)	-278.5	13.4	-293.3
Li ₂ B ₄ O ₇ (s)	-3363.9	155.6	-3171.5
Li ₂ BeF ₄ (s)	-2273.6	130.5	-2171.5
Li ₂ CO ₃ (s)	-1216.0	90.2	-1132.2
Li ₂ O (s)	-598.7	37.9	-561.9
Li ₂ O ₂ (s)	-632.6	56.5	-571.1
Li ₂ Si ₂ O ₅ (s)	-2561.0	125.5	-2417.1
Li ₂ SiO ₃ (s)	-1649.3	80.3	-1559.0
Li ₂ SO ₄ (s)	-1436.5	115.1	-1321.7
Li ₂ TiO ₃ (s)	-1670.7	91.8	-1579.9
Li ₃ AlF ₆ (s)	-3383.6	187.9	-3223.8

Compound	ΔH_f°	ΔS°	ΔG_f°
Li ₃ N (s)	-197.5	37.7	-154.0
LiAlF ₄ (g)	-1853.5	326.4	-1811.7
LiAlH ₄ (s)	-117.2	87.9	-48.5
LiAlO ₂ (s)	-1189.5	53.4	-1127.2
LiBeF ₃ (s)	-1651.8	89.1	-1576.1
LiBH ₄ (s)	-190.5	75.8	-124.8
LiBO ₂ (s)	-1019.2	51.7	-963.2
LiBr (s)	-350.9	74.1	-341.6
LiCl (s)	-408.3	59.3	-384.1
LiCl•H ₂ O (s)	-712.6	103.8	-632.6
LiClO ₄ (s)	-380.7	125.5	-254.0
LiF (s)	-616.9	35.7	-588.7
LiH (s)	-90.6	20.0	-68.5
LiI (s)	-270.1	85.8	-269.7
LiO (g)	83.7	210.9	60.5
LiOH (s)	-484.9	42.8	-438.9
LiOH•H ₂ O (s)	-789.8	92.1	-689.5
Lu (g)	427.6	184.7	404.6
Lu (s)	0.0	51.0	0.0
Lu ⁺³ (aq)	-665.3	-263.6	-627.6
Lu ₂ O ₃ (s)	-1878.2	110.0	-1789.1
LuCl ₃ •6H ₂ O (s)	-2830.9	376.1	-2411.2
Mg (ℓ)	9.0	42.5	6.1
Mg (g)	147.6	148.5	113.1
Mg (s)	0.0	32.7	0.0
Mg(ClO ₄) ₂ •6H ₂ O (s)	-2445.6	520.9	-1863.1
Mg(NO ₃) ₂ (s)	-790.7	164.0	-589.5
Mg(NO ₃) ₂ •6H ₂ O (s)	-2613.3	451.9	-2080.7
Mg(OH) ₂ (s)	-924.7	63.2	-833.9
Mg(VO ₃) ₂ (s)	-2201.6	160.7	-2039.4
Mg ⁺¹ (g)	891.6	154.3	848.9
Mg ⁺² (aq)	-466.9	-138.1	-454.8
Mg ₂ Al ₄ Si ₅ O ₁₉ (s cordierite)	-9108.6	407.1	-8598.1
Mg ₂ Ge (s)	-108.8	86.5	-105.9
Mg ₂ Si (s)	-77.8	66.9	-75.3
Mg ₂ SiO ₄ (s forsterite)	-2174.0	95.1	-2055.2
Mg ₂ TiO ₄ (s)	-2164.4	109.3	-2047.7
Mg ₂ V ₂ O ₇ (s)	-2835.9	200.4	-2645.3
Mg ₃ (PO ₄) ₂ (s)	-3780.7	189.2	-3538.8
Mg ₃ N ₂ (s)	-460.7	87.9	-400.8
Mg ₃ Si ₂ O ₅ (OH) ₄ (s chrysotile)	-4365.6	221.3	-4038.0

Compound	ΔH_f°	ΔS°	ΔG_f°
Mg ₃ Si ₄ O ₁₀ (OH) ₂ (s talc)	-5922.5	260.7	-5543.0
MgAl ₂ O ₄ (s)	-2312.9	88.7	-2190.3
MgBr ₂ (s)	-524.3	117.2	-503.8
MgBr ₂ •6H ₂ O (s)	-2410.0	397.5	-2056.0
MgCl ₂ (s)	-641.6	89.6	-592.1
MgCO ₃ (s)	-1095.8	65.7	-1012.1
MgCr ₂ O ₄ (s)	-1783.6	106.0	-1669.0
MgF ₂ (s)	-1124.2	57.2	-1071.1
MgFe ₂ O ₄ (s)	-1428.4	123.9	-1317.1
MgH ₂ (s)	-75.3	31.1	-36.0
MgI ₂ (s)	-364.0	129.7	-358.2
MgMoO ₄ (s)	-1400.9	118.8	-1295.7
MgO (s microcrystal)	-598.0	27.9	-566.0
MgO (s periclase)	-601.7	26.9	-569.0
MgS (s)	-346.0	50.3	-341.8
MgSiO ₃ (s clinoenstatite)	-1549.0	67.8	-1462.1
MgSO ₄ (s)	-1284.9	91.6	-1170.7
MgSO ₄ •6H ₂ O (s)	-3087.0	348.1	-2632.2
MgSO ₄ •7H ₂ O (s)	-3388.7	372.4	-2871.9
MgSO ₄ •H ₂ O (s)	-1602.1	126.4	-1428.8
MgTi ₂ O ₅ (s)	-2509.6	127.3	-2366.9
MgTiO ₃ (s)	-1572.8	74.6	-1484.1
MgWO ₄ (s)	-1532.6	101.2	-1420.9
Mn (g)	280.8	173.6	238.5
Mn (s alpha)	0.0	32.0	0.0
Mn (s gamma)	1.6	32.4	1.4
Mn(IO ₃) ₂ (s)	-669.4	263.6	-520.5
Mn(OH) ₂ (s precipitate/amorphous)	-695.4	99.2	-615.1
Mn ⁺² (aq)	-220.8	-73.6	-228.0
Mn ₂ O ₃ (s)	-959.0	110.5	-881.2
Mn ₂ SiO ₄ (s)	-1730.5	163.2	-1632.2
Mn ₃ C (s)	4.6	98.7	5.4
Mn ₃ O ₄ (s)	-1387.8	155.6	-1283.2
MnC ₂ O ₄ •2H ₂ O (s)	-1628.4	200.8	-1415.0
MnCl ₂ (s)	-481.3	118.2	-440.5
MnCl ₂ •2H ₂ O (s)	-1092.0	218.8	-942.2
MnCl ₂ •4H ₂ O (s)	-1687.4	303.3	-1423.8
MnCl ₂ •H ₂ O (s)	-789.9	174.1	-696.2
MnCO ₃ (s natural)	-894.1	85.8	-816.7
MnCO ₃ (s precipitated)	-882.8	113.0	-811.7
MnF ₂ (s)	-790.8	-748.9	92.3

Compound	ΔH_f°	ΔS°	ΔG_f°
MnO (s)	-385.2	59.7	-362.9
MnO ₂ (s)	-520.0	53.1	-465.2
MnO ₄ ⁻¹ (aq)	-541.4	191.2	-447.3
MnO ₄ ⁻² (aq)	-652.7	58.6	-500.8
MnS (s green)	-214.2	78.2	-218.4
MnSe (s)	-106.7	90.8	-111.7
MnSiO ₃ (s)	-1320.9	89.1	-1240.6
MnSO ₄ (s)	-1065.3	112.1	-957.4
Mo (g)	658.1	181.8	612.5
Mo (s)	0.0	28.7	0.0
Mo(CO) ₆ (g)	-912.1	489.5	-856.1
Mo(CO) ₆ (s)	-982.8	325.9	-877.8
Mo ₃ Si (s)	-96.2	106.3	-96.2
MoCl ₄ (s)	-480.3	223.8	-401.7
MoCl ₅ (s)	-527.2	238.5	-422.6
MoCl ₆ (s)	-523.0	255.2	-389.1
MoF ₆ (ℓ)	-1585.5	259.7	-1473.1
MoF ₆ (g)	-1557.7	350.4	-1472.3
MoO ₂ (s)	-588.9	46.3	-533.0
MoO ₂ Cl ₂ (g)	-634.3	337.7	-598.3
MoO ₃ (g)	-359.8	280.3	-343.1
MoO ₃ (s)	-745.1	77.7	-668.0
MoO ₄ ⁻² (aq)	-997.9	27.2	-836.4
MoOF ₄ (g)	-1255.2	330.5	-1192.4
MoS ₂ (s)	-235.1	62.6	-225.9
N (g)	472.7	153.2	455.6
N ₂ (g)	0.0	191.5	0.0
N ₂ F ₂ (g cis)	66.9	259.8	108.8
N ₂ F ₂ (g trans)	81.2	262.6	120.5
N ₂ H ₂ (g cis diimide)	213.4	218.4	243.1
N ₂ H ₂ (g trans)	182.4	220.1	213.0
N ₂ H ₄ (ℓ)	50.6	121.2	149.2
N ₂ H ₄ (g)	95.4	238.4	159.3
N ₂ O (g)	82.1	219.7	104.2
N ₂ O ₂ (g)	170.4	287.5	202.9
N ₂ O ₂ ⁻² (aq)	-17.2	27.6	138.9
N ₂ O ₃ (g)	83.7	312.2	139.4
N ₂ O ₄ (ℓ)	-19.6	209.2	97.4
N ₂ O ₄ (g)	9.2	304.2	97.8
N ₂ O ₄ (s)	-35.0	150.3	99.5
N ₂ O ₅ (s)	11.3	347.2	117.7

Compound	ΔH_f°	ΔS°	ΔG_f°
N_3^{-1} (aq)	275.1	108.0	348.1
Na (ℓ)	2.4	57.9	0.5
Na (g)	107.7	153.6	77.3
Na (s)	0.0	51.5	0.0
Na^{+1} (aq)	-240.1	59.0	-261.9
$Na_2B_4O_7$ (s)	-3276.1	189.5	-3083.6
Na_2CO_3 (s)	-1130.9	136.0	-1047.7
Na_2O (s)	-415.9	72.8	-376.6
Na_2O_2 (s)	-513.4	94.8	-449.8
Na_2S (s)	-373.2	97.9	-359.8
Na_2SiO_3 (s)	-1518.8	113.8	-1426.7
Na_2SO_3 (s)	-1090.4	146.0	-1002.1
Na_2SO_4 (s)	-1384.5	149.5	-1266.8
$Na_2SO_4 \cdot 10H_2O$ (s)	-4324.1	592.9	-3644.0
Na_2WO_4 (s)	-1543.9	160.3	-1430.9
Na_3AlCl_6 (s)	-1979.0	347.3	-1828.4
Na_3AlF_6 (ℓ)	-3238.4	286.6	-3088.2
Na_3AlF_6 (s cryolite)	-3309.5	238.5	-3142.2
$NaAlCl_4$ (s)	-1142.2	188.3	-1041.8
$NaAlO_2$ (s)	-1133.0	70.4	-1069.4
$NaBH_4$ (s)	-191.8	101.4	-127.1
$NaBO_2$ (s)	-975.7	73.5	-919.2
$NaBr$ (s)	-361.4	86.8	-349.3
$NaCl$ (s)	-411.0	72.4	-384.1
$NaClO_4$ (s)	-382.8	142.3	-254.4
NaF (s)	-575.3	51.2	-545.2
NaH (g)	125.0	188.0	103.7
NaH (s)	-56.4	40.0	-33.6
$NaHCO_3$ (s)	-947.7	102.1	-851.9
NaI (s)	-288.0	98.3	-284.5
$NaNO_3$ (s)	-466.7	116.3	-365.9
$NaOH$ (ℓ)	-416.9	75.9	-374.1
$NaOH$ (s)	-426.7	64.4	-379.1
$NaOH \cdot H_2O$ (s)	-732.9	84.5	-623.4
Nb (g)	725.9	186.2	681.2
Nb (s)	0.0	36.4	0.0
Nb_2C (s)	-190.0	64.0	-185.8
Nb_2O_5 (s high-temp. form)	-1899.5	137.2	-1766.1
NbC (s)	-138.9	35.4	-136.8
$NbCl_5$ (g)	-703.8	400.5	-646.0
$NbCl_5$ (s)	-797.5	210.5	-683.3

Compound	ΔH_f°	ΔS°	ΔG_f°
$NbCO_2$ (s)	-57.3	92.1	-55.2
$NbCO_3$ (s)	-59.0	121.3	-57.3
$NbCr_2$ (s)	-20.9	83.6	-20.9
NbF_5 (g)	-1739.7	321.8	-1678.2
NbF_5 (s)	-1813.8	160.3	-1699.1
$NbFe_2$ (s)	-46.4	100.4	-49.4
NbN (s)	-235.1	34.5	-201.7
NbO (g)	213.4	238.9	184.1
NbO (s)	-405.9	48.1	-378.7
NbO_2 (g)	-214.6	255.2	-218.8
NbO_2 (s)	-796.2	54.5	-740.6
Nd (g)	327.6	189.3	292.5
Nd (s)	0.0	71.6	0.0
Nd^{+3} (aq)	-696.2	-206.7	-671.5
$Nd_2(C_2O_4)_3 \cdot 10H_2O$ (s)	-6782.3	-799.1	-5907.8
Nd_2O_3 (s hexagonal)	-1807.9	154.4	-1720.9
Nd_2S_3 (s)	-1188.3	185.3	-1172.4
NdC_2 (g)	547.1	26.4	493.3
$NdCl_3 \cdot 6H_2O$ (s)	-2874.4	417.1	-2460.6
Ne (g)	0.0	146.2	0.0
NF_3 (g)	-131.4	260.7	-90.0
NH (g imidogen)	377.2	181.1	371.3
NH_2 (g amidogen)	190.4	194.6	199.8
NH_3 (g)	-46.1	192.3	-16.5
NH_4 (s carbamate)	-645.1	133.5	-448.1
NH_4^{+1} (aq)	-132.5	113.4	-79.4
$NH_4Al(SO_4)_2$ (s)	-2352.2	216.3	-2038.4
NH_4Br (s)	-270.8	113.0	-175.3
NH_4Cl (s)	-314.4	94.6	-203.0
NH_4ClO_4 (s)	-295.3	184.2	-88.9
NH_4F (s)	-464.0	72.0	-348.8
$NH_4H_2AsO_4$ (s)	-2189.5	172.1	-833.0
$NH_4H_2PO_4$ (s)	-1445.1	152.0	-1210.6
NH_4HCO_3 (s)	-849.4	120.9	-666.1
NH_4HF_2 (s)	-802.9	115.5	-651.0
NH_4HS (s)	-156.9	97.5	-50.6
NH_4HSe (s)	-133.1	96.7	-23.4
NH_4I (s)	-201.4	117.2	-112.6
NH_4N_3 (s)	115.5	112.6	274.1
NH_4NO_3 (s)	-365.6	151.1	-184.0
NH_4OH (ℓ)	-361.2	165.6	-254.1

Compound	ΔH_f°	ΔS°	ΔG_f°
NH ₄ ReO ₄ (s)	-945.6	232.6	-774.9
NH ₄ VO ₃ (s)	-1053.1	140.6	-888.3
Ni (g)	429.7	182.1	384.5
Ni (s)	0.0	29.9	0.0
Ni(CN) ₄ ⁻² (aq)	367.8	217.6	472.0
Ni(CO) ₄ (ℓ)	-633.0	313.4	-588.3
Ni(CO) ₄ (g)	-602.9	410.5	-587.3
Ni(IO ₃) ₂ (s)	-489.1	213.4	-326.4
Ni ⁺² (aq)	-54.0	-128.9	-45.6
Ni ₃ S ₂ (s)	-202.9	133.9	-197.1
NiCl ₂ (s)	-305.3	97.7	-259.1
NiCl ₂ •2H ₂ O (s)	-922.2	175.7	-760.2
NiCl ₂ •4H ₂ O (s)	-1516.7	242.7	-1235.1
NiCl ₂ •6H ₂ O (s)	-2103.2	344.3	-1713.5
NiF ₂ (s)	-651.5	73.6	-604.2
NiO (s)	-239.7	38.0	-211.7
NiS (s)	-82.0	53.0	-79.5
NiSO ₄ (s)	-872.9	97.1	-759.8
NiSO ₄ •6H ₂ O (s tetrahedral)	-2682.8	332.2	-2225.0
NiSO ₄ •7H ₂ O (s)	-2976.3	378.9	-2462.2
NO (g)	90.3	210.7	86.6
NO ₂ (g)	33.2	240.0	51.3
NO ₂ ⁻¹ (aq)	-104.6	140.2	-37.2
NO ₂ Cl (g)	12.6	272.0	54.4
NO ₂ F (g)	-79.5	260.2	-37.2
NO ₃ (g)	70.9	252.6	114.5
NO ₃ ⁻¹ (aq)	-207.4	146.4	-111.3
NOBr (g)	82.2	273.6	82.4
NOCl (g)	51.7	261.6	66.1
NOF (g)	-65.7	248.0	-50.3
NOF ₃ (g)	-163.2	278.4	-96.2
NpO ₂ (s)	-1029.3	80.3	-979.1
O (g)	249.2	161.0	231.8
O ₂ (g)	0.0	205.0	0.0
O ₂ F ₂ (g)	19.8	268.1	61.4
O ₃ (g)	142.7	238.8	163.2
OCN ⁻¹ (aq)	-146.0	106.7	-97.5
OF (g)	124.3	217.7	120.1
OF ₂ (g)	24.5	247.3	41.8
OH ⁻¹ (aq)	-230.0	-10.8	-157.3
Os (g)	790.8	192.5	744.8

Compound	ΔH_f°	ΔS°	ΔG_f°
Os (s)	0.0	32.6	0.0
OsCl ₃ (s)	-190.4	129.7	-121.3
OsCl ₄ (s)	-254.8	154.8	-159.0
OsO ₄ (g)	-337.2	293.7	-292.9
OsO ₄ (s white)	-385.8	167.8	-303.8
OsO ₄ (s yellow)	-394.1	143.9	-305.0
OsS ₂ (s)	-146.0	54.4	-133.9
P (g red V)	333.9	163.1	292.0
P (l red V)	18.1	42.9	12.1
P (s alpha white)	17.5	41.1	12.0
P (s red V)	0.0	22.8	0.0
P ₂ (g)	146.2	218.0	103.8
P ₂ H ₄ (ℓ)	-5.0	167.4	66.9
P ₂ O ₇ ⁻⁴ (aq)	-2271.1	-117.2	-1919.2
P ₄ (g)	128.9	128.9	72.4
P ₄ O ₁₀ (s hexagonal)	-2940.1	228.9	-2675.3
P ₄ S ₃ (ℓ)	-151.0	207.1	-156.9
P ₄ S ₃ (g)	-81.2	319.2	-120.5
P ₄ S ₃ (s)	-154.8	200.8	-159.0
Pb (ℓ)	4.3	71.7	2.2
Pb (g)	195.6	175.3	162.6
Pb (s)	0.0	64.8	0.0
Pb ⁺² (aq)	-1.7	10.5	-24.4
Pb(IO ₃) ₂ (s)	-495.4	313.0	-351.5
Pb(N ₃) ₂ (s monoclinic)	478.2	148.1	624.7
Pb(N ₃) ₂ (s orthorhombic)	476.1	149.4	622.2
Pb(ReO ₄) ₂ •2H ₂ O (s)	-2234.3	309.6	-1903.7
Pb ₂ SiO ₄ (s)	-1376.5	187.0	-1267.8
Pb ₃ (PO ₄) ₂ (s)	-2595.3	353.1	-2432.6
Pb ₃ O ₄ (s)	-718.8	212.1	-601.7
PbB ₂ O ₄ (s)	-1556.5	130.5	-1450.2
PbB ₄ O ₇ (s)	-2857.7	166.9	-2667.3
PbBr (g)	71.1	272.4	31.8
PbBr ₂ (ℓ)	-267.4	173.9	-254.6
PbBr ₂ (g)	-104.4	339.3	-140.8
PbBr ₂ (s)	-277.4	161.1	-260.8
PbBr ₄ (g)	-456.4	426.1	-473.3
PbC ₂ O ₄ (s)	-851.4	146.0	-750.2
PbCl (g)	15.1	259.5	-9.6
PbCl ₂ (ℓ)	-344.3	153.2	-304.2
PbCl ₂ (g)	-174.1	317.1	-182.8

Compound	ΔH_f°	ΔS°	ΔG_f°
PbCl ₂ (s)	-359.4	136.0	-314.2
PbCl ₄ (g)	-552.4	381.5	-513.9
PbClF (s)	-534.7	121.8	-488.3
PbCO ₃ (s)	-699.2	131.0	-625.5
PbF (g)	-80.3	249.8	-105.0
PbF ₂ (s alpha)	-677.0	113.0	-631.0
PbF ₂ (s beta)	-676.1	114.4	-631.2
PbF ₄ (g)	-1133.5	333.5	-1092.7
PbI ₂ (ℓ)	-157.7	198.9	-161.9
PbI ₂ (s)	-175.4	174.9	-173.6
PbI ₄ (g)	-224.5	466.1	-274.9
PbMoO ₄ (s)	-1051.9	166.1	-951.4
PbO (s red)	-219.0	66.5	-189.2
PbO (s yellow)	-218.1	68.7	-188.7
PbO•PbCO ₃ (s)	-918.4	204.2	-816.7
PbO ₂ (s)	-274.5	71.8	-215.5
PBr ₃ (ℓ)	-184.5	240.2	-175.7
PBr ₃ (g)	-139.3	348.0	-162.8
PbS (s)	-98.3	91.3	-96.7
PbSe (s)	-102.9	102.5	-101.7
PbSeO ₄ (s)	-609.2	167.8	-505.0
PbSiO ₃ (s)	-1145.2	110.0	-1061.1
PbSiO ₄ (s)	-2023.8	84.0	-1909.6
PbSO ₄ (s)	-919.9	148.6	-813.2
PbTe (s)	-70.7	110.0	-69.5
PCl ₃ (ℓ)	-319.7	217.2	-272.4
PCl ₃ (g)	-287.0	311.7	-267.8
PCl ₅ (g)	-374.9	364.6	-305.0
Pd (g)	378.2	166.9	339.7
Pd (s)	0.0	37.8	0.0
Pd ⁺² (aq)	169.5	-117.2	176.6
Pd ₂ H (s)	-19.7	91.6	-5.0
PdBr ₄ ⁻² (aq)	-371.5	292.9	-318.0
PdCl ₂ (s)	-171.5	104.6	-125.1
PdI ₂ (s)	-63.6	150.6	-62.8
PdS (s)	-75.3	46.0	-66.9
PdS ₂ (s)	-81.2	79.5	-74.5
PF ₃ (g)	-918.8	273.1	-897.5
PF ₅ (g)	-1577.0	300.8	-1508.8
PH (g)	255.2	196.2	221.8
PH ₃ (g)	23.0	210.2	25.5

Compound	ΔH_f°	ΔS°	ΔG_f°
PH ₄ Br (s)	-127.6	110.0	-47.7
PH ₄ I (s)	-69.9	123.0	0.8
PN (g)	32.5	211.1	10.3
Po (g)	145.6	188.8	108.0
PO (g)	-12.1	222.7	-41.2
Po (s)	0.0	62.8	0.0
PO ₄ ⁻³ (aq)	-1277.4	-221.8	-1018.8
POBr ₃ (g)	-389.1	359.7	-390.9
POCl ₂ F (g)	-748.9	320.3	-711.3
POCl ₃ (ℓ)	-597.1	222.5	-520.9
POCl ₃ (g)	-542.3	325.4	-502.5
POClF ₂ (g)	-954.0	301.6	-912.1
POF ₃ (g)	-1236.8	285.3	-1193.7
PoO ₂ (s)	-251.0	71.1	196.7
Pr (g)	355.6	189.7	320.9
Pr (s)	0.0	73.2	0.0
Pr ⁺³ (aq)	-704.6	-209.2	-679.1
PrC ₂ (s)	549.4	261.9	496.6
PrH ₂ (s)	-198.3	56.9	-154.4
PSBr ₃ (g)	-263.6	372.7	-288.7
PSCl ₃ (g)	-363.2	337.2	-347.7
PSF ₃ (g)	-991.6	298.0	-973.6
Pt (g)	565.3	192.3	520.5
Pt (s)	0.0	41.6	0.0
PtCl ₄ ⁻² (aq)	-503.3	167.4	-368.6
PtCl ₆ ⁻² (aq)	-673.6	220.1	-489.5
PtO ₂ (g)	171.5	259.4	167.8
PtS (s)	-81.6	55.1	-76.2
PtS ₂ (s)	-108.8	74.7	-99.6
Pu (s)	0.0	51.5	0.0
Pu(SO ₄) ₂ (s)	-2200.8	163.2	-1969.5
Pu ⁺³ (aq)	-579.9	-163.2	-587.9
Pu ₂ C ₃ (s)	-7.1	169.5	-19.7
Pu ₂ O ₃ (s alpha)	-1799.1	138.9	-1720.5
Pu ₂ O ₃ (s beta)	-1715.4	152.3	-1632.3
Pu ₂ S ₃ (s)	-989.5	192.5	-985.5
PuBr ₃ (s)	-831.8	192.9	-804.6
PuCl ₃ (s)	-961.5	159.0	-892.7
PuF ₃ (s)	-1552.3	113.0	-1478.8
PuF ₄ (s)	-1732.2	161.9	-1644.7
PuF ₆ (s)	25.5	222.6	27.2

Compound	ΔH_f°	ΔS°	ΔG_f°
PuH ₂ (s)	-139.3	59.8	-101.7
PuH ₃ (s)	-138.1	64.9	-82.5
PuI ₃ (s)	-648.5	214.2	-644.0
PuN (s)	-316.7	59.4	-289.5
PuO (s)	-564.8	70.7	-538.9
PuO ₂ (s)	-1058.1	82.4	-1005.8
PuOBr (s)	-888.7	119.2	-854.5
PuOCl (s)	-931.8	108.8	-884.0
PuOF (s)	-1128.8	91.6	-1078.9
PuOI (s)	-827.6	126.4	-800.9
PuS (s)	-439.3	78.2	-436.7
Ra (g)	159.0	176.4	129.7
Ra (s)	0.0	71.1	0.0
Ra ⁺² (aq)	-527.6	54.0	-561.5
Ra(IO ₃) ₂ (s)	-1026.8	272.0	-868.6
Ra(NO ₃) ₂ (s)	-991.6	221.8	-796.2
RaCl ₂ •2H ₂ O (s)	-1464.4	213.4	-1302.9
RaSO ₄ (s)	-1471.1	138.1	-1365.7
Rb (g)	85.8	170.0	55.9
Rb (s)	0.0	69.5	0.0
Rb ⁺¹ (aq)	-251.2	121.5	-284.0
RbBr (s)	-389.2	104.9	-378.2
RbCl (s)	-435.1	94.6	-412.0
RbClO ₃ (s)	-392.5	151.9	-292.0
RbClO ₄ (s)	-434.6	160.7	-306.2
RbI (s)	-328.4	118.0	-325.5
Re (g)	769.9	188.8	724.7
Re (s)	0.0	36.9	0.0
Re ⁻¹ (aq)	46.0	230.1	10.0
Re ₂ O ₇ (g)	-1184.1	451.9	-994.1
Re ₂ O ₇ (s)	-1240.1	207.1	-1066.1
ReCl ₃ (s)	-263.6	123.9	-188.3
ReCl ₆ ⁻² (aq)	-761.5	251.0	-589.9
ReO ₂ (s)	-422.6	171.5	-368.2
ReO ₃ (s)	-605.0	257.3	-531.4
Rh (g)	556.9	185.7	510.9
Rh (s)	0.0	31.6	0.0
Rh ₂ O ₃ (s)	-285.8	110.9	-272.0
Rn (g)	0.0	176.1	0.0
Ru (g)	642.7	186.4	595.8
Ru (s)	0.0	28.5	0.0

Compound	ΔH_f°	ΔS°	ΔG_f°
RuO ₄ (ℓ)	-228.5	183.3	-152.3
RuO ₄ (g)	-184.1	290.0	-139.8
RuO ₄ (s)	-239.3	146.4	-152.3
S (ℓ)	1.4	35.2	0.4
S (g)	277.4	167.7	236.9
S (s rhombic)	0.0	31.9	0.0
S ₂ (g)	129.0	228.1	80.1
S ⁻² (aq)	33.1	-14.6	85.8
S ₂ Cl ₂ (g)	-19.5	319.5	-29.3
S ₂ O ₄ ⁻² (aq)	-753.5	92.1	-600.4
S ₂ O ₈ ⁻² (aq)	-1338.9	248.1	-1110.4
S ₈ (g)	101.3	430.2	49.2
Sb (g)	262.3	180.2	222.2
Sb (s)	0.0	45.7	0.0
Sb ₂ (g)	235.6	254.8	187.0
Sb ₂ O ₄ (s)	-907.5	127.2	-795.8
Sb ₂ O ₅ (s)	-971.9	125.1	-829.3
Sb ₂ S ₃ (s black)	-174.9	182.0	-173.6
Sb ₂ Te ₃ (s)	-56.5	234.3	-55.2
Sb ₄ (g)	205.0	351.5	141.4
Sb ₄ O ₆ (s cubic)	-1440.6	220.9	-1268.2
Sb ₄ O ₆ (s orthorhombic)	-1417.1	246.0	-1253.1
SbBr ₃ (s)	-259.4	179.9	-239.3
SbCl ₃ (g)	-313.8	337.7	-301.3
SbCl ₃ (s)	-382.2	184.1	-323.7
SbCl ₅ (ℓ)	-440.2	301.3	-350.2
SbCl ₅ (g)	-394.3	401.8	-334.3
SbH ₃ (g)	145.1	232.7	232.7
Sc (g)	377.8	174.7	336.1
Sc (s)	0.0	34.6	0.0
Sc(OH) ₂ Cl (s)	-1267.8	108.8	-1156.0
Sc(OH) ₃ (s)	-1363.6	100.4	-1233.4
Sc ⁺³ (aq)	-614.2	-255.2	-586.6
Sc ₂ (g)	648.1	255.2	592.5
Sc ₂ O ₃ (s)	-1908.8	77.0	104.0
ScCl (g)	112.6	234.3	86.2
ScF (g)	-138.9	222.2	-164.4
ScF ₂ (g)	-642.2	280.3	-655.2
ScF ₃ (g)	-1246.8	300.4	-1234.3
ScF ₃ (s)	-1629.3	92.1	-1555.6
SCN ⁻¹ (aq)	76.4	144.4	92.7

Compound	ΔH_f°	ΔS°	ΔG_f°
ScO (g)	-57.2	224.5	-83.3
ScS (g)	174.9	235.6	124.3
Se (g)	227.1	176.6	187.1
Se (s hexagonal black)	0.0	42.4	0.0
Se ₂ (g)	146.0	251.9	96.2
SeF ₆ (g)	-1117.1	313.8	-1016.7
SeO (g)	53.4	233.9	26.8
SeO ₃ ⁻² (aq)	-509.2	12.6	-369.9
SeO ₄ ⁻² (aq)	-599.2	54.0	-441.4
SF ₂ Cl (g)	-1048.1	319.1	-949.4
SF ₄ (g)	-728.4	291.1	-684.8
SF ₆ (g)	-1220.9	291.7	-1115.9
Si (g)	455.6	167.9	411.3
Si (s)	0.0	18.8	0.0
Si ₂ (g)	594.1	229.8	535.6
Si ₂ H ₆ (g)	80.3	272.6	127.2
Si ₃ N ₄ (s)	-743.5	113.0	-581.6
SiBr ₄ (ℓ)	-457.3	277.8	-443.9
SiBr ₄ (g)	-415.5	377.8	-431.8
SiC (g)	615.1	236.6	552.3
SiC (s alpha hexagonal)	-71.6	16.5	-69.0
SiC (s beta cubic)	-73.2	16.6	-70.7
SiCl ₂ (g)	-165.6	280.3	-177.2
SiCl ₄ (ℓ)	-687.0	239.7	619.9
SiCl ₄ (g)	-662.8	330.6	-622.6
SiF (g)	7.1	225.7	-24.3
SiF ₂ (g)	-587.9	256.8	-598.3
SiF ₄ (g)	-1614.9	282.4	-1572.7
SiH ₃ Cl (g)	-200.8	250.5	-179.9
SiH ₃ F (g)	-439.3	238.3	-418.4
SiH ₄ (g)	30.5	204.5	56.9
SiHCl ₃ (ℓ)	-539.3	227.6	-482.6
SiN (g)	486.5	216.7	456.1
SiO ₂ (c amorphous)	-903.5	46.9	-850.7
SiO ₂ (s cristobalite)	-909.5	42.7	-855.9
SiO ₂ (s quartz)	-910.9	41.8	-856.7
SiO ₂ (s tridymite)	-909.1	43.5	-855.3
SiOF ₂ (g)	-966.5	271.2	-949.8
SiS (g)	112.5	223.6	60.9
SiS ₂ (s)	-213.4	80.3	-212.6
Sm (g)	206.7	182.9	172.8

Compound	ΔH_f°	ΔS°	ΔG_f°
Sm (s)	0.0	69.6	0.0
Sm ⁺³ (aq)	-691.6	-211.7	-666.5
Sm ₂ (SO ₄) ₃ •8H ₂ O (s)	-6330.8	672.4	-5538.8
Sm ₂ O ₃ (s monoclinic)	-1823.0	151.0	-1734.7
SmC ₂ (s)	-71.1	96.2	-75.7
SmCl ₃ •6H ₂ O (s)	-2870.2	414.2	-2456.4
Sn (g)	302.1	168.4	267.4
Sn (s gray)	-2.1	44.1	0.1
Sn (s white)	0.0	51.6	0.0
Sn ⁺² (aq)	-8.8	-17.0	-27.2
SnBr ₄ (g)	-314.6	411.8	-331.4
SnBr ₄ (s)	-377.4	264.4	-350.2
SnCl ₄ (ℓ)	-511.3	258.6	-440.2
SnH ₄ (g)	162.8	227.6	188.3
SnO (s)	-285.8	56.5	-256.9
SnO ₂ (s)	-580.7	52.3	-519.7
SnS (s)	-100.4	77.0	-98.3
SO (g)	4.9	221.8	-21.2
SO ₂ (g)	-296.8	248.1	-300.2
SO ₂ Cl ₂ (g)	-354.8	311.8	-310.5
SO ₂ F ₂ (g)	-758.6	283.9	-712.1
SO ₃ (ℓ)	-441.0	95.6	-368.4
SO ₃ (g)	-395.7	256.7	-371.1
SO ₃ (s beta)	-454.5	52.3	-369.0
SO ₃ ⁻² (aq)	-635.6	-29.3	-486.6
SO ₄ ⁻² (aq)	-909.3	20.1	-744.6
SOCl ₂ (g)	-212.6	309.7	-198.3
Sr (ℓ)	7.6	57.2	6.2
Sr (g)	164.0	164.5	130.5
Sr (s)	0.0	52.3	0.0
Sr ⁺² (aq)	-545.8	-32.6	-559.5
Sr(BrO ₃) ₂ •H ₂ O (s)	-1104.6	280.3	-791.2
Sr(IO ₃) ₂ (s)	-1019.2	234.3	-855.2
Sr(IO ₃) ₂ •6H ₂ O (s)	-2789.9	456.1	-2274.8
Sr(NO ₃) ₂ (s)	-978.2	194.6	-780.2
Sr(NO ₃) ₂ •4H ₂ O (s)	-2154.8	369.0	-1730.7
Sr ₂ SiO ₄ (s)	-2304.6	153.1	-2191.2
Sr ₂ TiO ₄ (s)	-2287.4	159.0	-2178.6
Sr ₃ (AsO ₄) ₂ (s)	-3317.1	255.2	-3080.3
SrBr ₂ (s)	-718.0	143.4	-699.8
SrBr ₂ •6H ₂ O (s)	-2531.3	405.9	-2174.4

Compound	ΔH_f°	ΔS°	ΔG_f°
SrCl ₂ (s)	-828.9	114.9	-781.1
SrCl ₂ •2H ₂ O (s)	-1438.0	217.6	-1282.0
SrCl ₂ •6H ₂ O (s)	-2623.8	390.8	-2241.2
SrCO ₃ (s strontianite)	-1220.1	97.1	-1140.1
SrF ₂ (s)	-1217.1	82.1	-1165.6
SrHPO ₄ (s)	-1821.7	121.3	-1688.7
SrI ₂ (s)	-561.5	159.1	-558.7
SrO (s)	-592.0	55.5	-562.4
SrS (s)	-453.1	68.2	-448.5
SrSiO ₃ (s)	-1633.9	96.7	-1549.8
SrSO ₄ (s)	-1453.1	117.6	-1341.0
SrTiO ₃ (s)	-1672.4	108.8	-1588.4
SrWO ₄ (s)	-1639.7	138.1	-1531.3
SrZrO ₃ (s)	-1767.3	115.1	-1682.8
Ta (g)	782.0	185.1	739.3
Ta (s)	0.0	41.5	0.0
Ta ₂ C (s)	-213.4	86.6	-212.6
Ta ₂ H (s)	-32.6	79.1	-69.0
Ta ₂ O ₅ (s beta)	-2046.0	143.1	-1911.3
TaC (s)	-146.4	42.3	-144.8
TaO (g)	251.0	241.8	221.8
TaO ₂ (g)	-200.8	280.3	-209.2
Tb (g)	388.7	203.5	349.8
Tb (s)	0.0	73.2	0.0
Tb ⁺³ (aq)	-682.8	-225.9	-651.9
TbC ₂ (s)	885.8	267.8	831.4
TbCl ₃ •6H ₂ O (s)	-2859.4	403.3	-2441.0
Tc (s)	0.0	33.5	0.0
Te (g)	196.7	182.6	157.1
Te (s)	0.0	49.7	0.0
Te ₂ (g)	168.2	268.0	118.0
TeO (g)	65.3	241.4	38.5
TeO ₂ (s)	-322.6	79.5	-270.3
TeSe (g)	159.0	265.7	108.8
Th (s)	0.0	56.9	0.0
Th ₃ N ₄ (s)	-1288.7	178.7	-1179.9
ThO ₂ (s)	-1221.7	65.3	-1171.9
Ti (s alpha)	0.0	30.7	0.0
Ti (s beta)	6.0	36.4	4.3
Ti ₂ O ₃ (s)	-1520.9	78.8	-1434.3
Ti ₃ O ₅ (s alpha)	-2459.4	129.3	-2317.5

Compound	ΔH_f°	ΔS°	ΔG_f°
Ti ₄ O ₇ (s)	-3404.5	198.7	-3213.3
TiB (s)	-160.3	34.7	-159.8
TiB ₂ (s)	-280.3	28.5	-272.0
TiBr ₂ (s)	-405.9	108.4	-383.3
TiBr ₃ (s)	-550.2	176.4	-525.5
TiBr ₄ (ℓ)	-605.4	284.2	-589.9
TiBr ₄ (g)	-550.2	398.9	-569.0
TiBr ₄ (s)	-618.0	243.6	-590.8
TiC (s)	-184.1	24.2	-180.3
TiCl ₂ (s)	-513.8	87.5	-464.4
TiCl ₃ (s)	-720.9	139.8	-653.5
TiCl ₄ (ℓ)	-804.2	252.3	-737.2
TiCl ₄ (g)	-763.2	354.8	-726.8
TiCl ₄ (s)	-815.0	208.8	-735.1
TiF ₂ (g)	-686.2	255.2	-694.5
TiF ₃ (s)	-1435.1	87.9	-1362.3
TiF ₄ (g)	-1551.4	314.6	-1515.4
TiF ₄ (s)	-1649.3	134.0	-1559.4
TiH ₂ (s)	-144.4	29.7	-105.0
TiI ₂ (s)	-267.8	121.3	-259.4
TiI ₃ (s)	-322.2	192.5	-318.0
TiI ₄ (ℓ)	-348.3	311.8	-362.9
TiI ₄ (s)	-375.7	246.0	-370.7
TiN (s)	-338.1	30.3	-309.6
TiO (s alpha)	-542.7	34.8	-513.4
TiO ₂ (s anatase)	-938.7	49.9	-883.3
TiO ₂ (s rutile)	-944.8	50.3	-889.5
TiOCl ₂ (g)	-545.6	320.9	-535.1
TiOF ₂ (g)	-924.7	284.6	-907.9
Tl (g)	182.2	180.9	147.4
Tl (s)	0.0	64.2	0.0
Tl ⁺¹ (aq)	5.4	125.5	-32.4
Tl ⁺³ (aq)	196.6	-192.0	214.6
Tl ₂ CO ₃ (s)	-700.0	155.2	-614.6
Tl ₂ CrO ₄ (s)	-944.8	282.4	-861.5
Tl ₂ O (s)	-178.7	125.5	-147.3
Tl ₂ S (s)	-97.1	150.6	-93.7
Tl ₂ Se (s)	-58.6	171.5	-59.0
Tl ₂ SeO ₄ (s)	-631.8	234.3	-528.9
Tl ₂ SO ₄ (s)	-931.8	230.5	-830.5
TlBr (s)	-173.2	120.5	-167.4

Compound	ΔH_f°	ΔS°	ΔG_f°
TlBrO ₃ (s)	-136.4	168.6	-53.1
TlCl (s)	-204.1	111.3	-184.9
TlCNS (s thiocyanate)	28.5	163.2	38.5
TlI (s)	-123.9	127.6	-125.4
TlN ₃ (s)	233.5	146.9	294.5
TlNO ₃ (s)	-243.9	160.7	-152.5
TlO ₃ (s)	-267.4	176.6	-191.9
TlOH (s)	-238.9	87.9	-195.8
Tm (g)	232.2	190.0	197.5
Tm (s)	0.0	74.0	0.0
Tm ⁺³ (aq)	-697.9	-242.7	-661.9
Tm ₂ O ₃ (s)	-1888.7	139.8	-1794.5
U (s)	0.0	50.3	0.0
U ⁺³ (aq)	-489.1	-188.0	-476.2
U ⁺⁴ (aq)	-591.2	-410.0	-531.9
U ₂ N ₃ (s)	-891.2	121.3	-811.7
UBr ₃ (s)	-711.7	205.0	-689.1
UBr ₄ (s)	-822.6	234.3	-788.7
UCl ₃ (s)	-891.2	159.0	-823.8
UCl ₄ (s)	-1051.0	198.3	-962.3
UCl ₅ (s)	-1096.6	242.7	-993.3
UCl ₆ (s)	-1139.7	285.8	-1010.4
UF ₃ (s)	-1493.7	117.2	-1418.4
UF ₄ (s)	-1853.5	151.0	-1761.5
UF ₅ (s)	-2041.8	197.9	-1928.8
UF ₆ (g)	-2147.4	377.9	-2063.7
UF ₆ (s)	-2197.0	227.6	-2068.5
UH ₃ (s)	-127.2	63.9	-72.6
UI ₃ (s)	-479.9	234.3	-482.4
UI ₄ (s)	-531.4	280.3	-527.6
UICl ₃ (s)	-920.1	225.9	-855.2
UN (s)	-334.7	62.3	-313.8
UO ₂ (s)	-1129.7	77.8	-1075.3
UO ₂ (NO ₃) ₂ (s)	-1377.4	276.1	-1142.7
UO ₂ (NO ₃) ₂ •2H ₂ O (s)	-2008.3	355.6	-1659.4
UO ₂ (NO ₃) ₂ •3H ₂ O (s)	-2310.4	393.3	-1902.5
UO ₂ (NO ₃) ₂ •6H ₂ O (s)	-3197.8	505.6	-2615.0
UO ₂ (NO ₃) ₂ •H ₂ O (s)	-1693.7	318.0	-1402.9
UO ₂ SO ₄ •3H ₂ O (s)	-2789.9	263.6	-2451.8
UO ₃ (s)	-1263.6	98.6	-1184.1
V (g)	514.2	182.2	453.2

Compound	ΔH_f°	ΔS°	ΔG_f°
V (s)	0.0	28.9	0.0
V ₂ O ₃ (s)	-1228.0	98.3	-1139.3
V ₂ O ₄ (s alpha)	-1427.2	102.5	-1318.4
V ₂ O ₅ (s)	-1550.6	131.0	-1419.6
V ₃ O ₅ (s)	-1945.6	163.2	-1815.9
V ₄ O ₇ (s)	-2656.8	217.6	-2472.7
VCl ₂ (s)	-451.9	97.1	-405.9
VCl ₃ (s)	-580.7	131.0	-511.3
VCl ₄ (ℓ)	-569.4	255.2	-503.8
VCl ₄ (g)	-525.5	362.3	-492.0
VF ₅ (ℓ)	-1480.3	175.7	-1373.2
VF ₅ (g)	-1433.9	320.8	-1369.8
VN (s)	-217.2	37.3	-191.2
VO (g)	104.6	233.5	75.3
VO (s)	-431.8	38.9	-404.2
VO ⁺² (aq)	-486.6	-133.9	-446.4
VO ₂ (s)	-717.6	62.6	51.5
VO ₂ ⁺¹ (aq)	-649.8	-42.3	-587.0
VO ₃ ⁻¹ (aq)	-888.3	50.2	-783.7
VOCl ₃ (ℓ)	-734.7	205.0	-668.6
VOCl ₃ (g)	-695.6	344.2	-659.3
VOSCN ⁺¹ (aq)	-410.0	33.5	-359.8
VOSO ₄ (s)	-1309.2	108.8	-1169.9
W (ℓ)	46.9	45.7	40.4
W (g)	851.0	173.9	808.8
W (s)	0.0	32.7	0.0
W ₃ O ₈ (g)	-1711.3	493.7	-1581.6
WBr ₅ (s)	-311.7	272.0	-269.5
WBr ₆ (s)	-343.1	313.8	-288.7
WCl ₂ (s)	-257.3	130.5	-220.1
WCl ₄ (s)	-443.5	198.3	-359.8
WCl ₅ (s)	-514.6	217.6	-401.7
WCl ₆ (s)	-594.1	238.5	-456.1
WF ₆ (ℓ)	-1748.5	249.4	-1631.8
WF ₆ (g)	-961.1	347.7	-836.0
WO ₂ (s)	-589.7	50.5	-533.9
WO ₂ Cl ₂ (s)	-780.3	200.8	-702.9
WO ₃ (s)	-842.9	75.9	-764.0
WOCl ₄ (g)	-573.2	377.0	-510.5
WOCl ₄ (s)	-671.1	172.8	-549.4
WOF ₄ (g)	-1334.7	334.7	-1276.1

Compound	ΔH_f°	ΔS°	ΔG_f°
Xe (g)	0.0	169.6	0.0
Y (g)	421.3	179.4	381.2
Y (s)	0.0	44.4	0.0
Y(ReO ₄) ₃ (s)	-2936.8	368.2	-2633.4
Y ⁺³ (aq)	-723.4	-251.0	-656.1
Y ₂ (g)	684.1	267.8	630.5
Y ₂ O ₃ (s)	-1905.3	99.1	-1816.7
Yb (g)	152.3	173.0	118.4
Yb (s)	0.0	59.9	0.0
Yb ⁺³ (aq)	-674.5	238.5	-643.9
Yb ₂ O ₃ (s)	-1814.6	133.1	-1726.7
YbC ₂ (s)	-74.9	79.5	-77.4
YbCl ₃ •6H ₂ O (s)	-2846.0	395.8	-2429.2
YBr ⁺² (aq)	-852.7	-179.9	-801.7
YC ₂ (g)	596.6	255.2	537.2
YC ₂ (s)	-108.8	54.4	-108.8
YCl (g)	200.0	244.1	173.6
YCl ⁺² (aq)	-895.4	-192.5	-831.4
YCl ₃ •6H ₂ O (s)	-2892.4	384.9	-2477.4
YF (g)	-138.1	231.7	-163.2
YF ₃ (g)	-1288.7	311.7	-1277.8
YF ₃ (s)	-1718.8	100.4	-1644.7
YH ₂ (s)	-156.9	38.4	-116.3
YH ₃ (s)	-197.9	41.9	-138.9
YO (g)	-38.9	233.8	-64.9
YS (g)	174.5	242.7	124.3
Zn (g)	130.7	160.9	95.2
Zn (s)	0.0	41.6	0.0
Zn ⁺² (aq)	-153.9	-112.1	-147.1
Zn(ClO ₄) ₂ •6H ₂ O (s)	-2133.4	545.6	-1555.6
Zn(NO ₃) ₂ •6H ₂ O (s)	-2306.6	456.9	-1773.1
Zn(OH) ₂ (s beta)	-641.9	81.2	-553.2
Zn(OH) ₂ (s epsilon)	-639.1	81.6	-555.1
Zn ₂ SiO ₄ (s)	-1636.7	131.4	-1523.2
ZnBr ₂ (s)	-328.7	138.5	-312.1
ZnBr ₂ •2H ₂ O (s)	-937.2	198.7	-799.6
ZnC ₂ O ₄ •2H ₂ O (s)	-1564.8	195.4	-1346.0

Compound	ΔH_f°	ΔS°	ΔG_f°
ZnCl ₂ (s)	-415.1	108.4	-369.4
ZnCO ₃ (s)	-812.8	82.4	-731.6
ZnF ₂ (s)	-764.4	73.7	-713.4
ZnI ₂ (s)	-208.0	161.1	-209.0
ZnO (s)	-348.3	43.6	-318.3
ZnS (s sphalerite)	-206.0	57.7	-201.3
ZnSe (s)	-163.0	84.0	-163.0
ZnSeO ₃ •H ₂ O (s)	-930.9	163.2	-792.9
ZnSO ₄ (s)	-982.8	128.0	-874.5
ZnSO ₄ •6H ₂ O (s)	-2777.5	363.6	-2324.8
ZnSO ₄ •7H ₂ O (s)	-3077.8	388.7	-2563.1
ZnSO ₄ •H ₂ O (s)	-1304.5	138.5	-1132.0
Zr (s alpha hexagonal)	0.0	39.0	0.0
Zr (s beta)	7.2	46.7	4.9
ZrB ₂ (s)	-322.6	35.9	-318.0
ZrBr ₃ (s)	-636.0	172.1	-606.7
ZrBr ₄ (s)	-759.8	224.7	-724.3
ZrC (s)	-196.7	33.3	-193.3
ZrCl ₂ (s)	-431.0	108.8	-384.9
ZrCl ₃ (s)	-715.5	145.6	-644.3
ZrCl ₄ (s)	-980.5	181.6	-889.9
ZrF ₂ (s)	-962.3	75.3	-912.1
ZrF ₃ (s)	-1401.6	87.9	-1326.3
ZrF ₄ (s)	-1911.3	104.7	-1810.0
ZrH ₂ (s)	-169.0	35.0	-128.9
ZrI ₂ (s)	-259.4	150.2	-258.2
ZrI ₃ (s)	-397.5	204.6	-394.6
ZrI ₄ (s)	-484.9	256.9	-480.7
ZrN (s)	-364.8	38.9	-336.4
ZrO ₂ (s monoclinic)	-1097.5	50.4	-1039.7

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